COMPUTERWORLD

ENRON LESSON: TECH IS FOR SUPPORT

Fall fuels questions about for-profit IT

BY MELISSA SOLOMON AND MICHAEL MEEHAN

Even great ideas have their limits.

Following the debut of Enron Corp.'s Web-based power and gas trading platform, revenue at the Houston-based energy company jumped from $40.1 billion in 1999 to $100.8 billion the following year.

But after striking gold by combining its energy industry experience with a world-class trading system, Enron kept digging into new markets, convinced that its IT infrastructure had the Midas touch.

In 2000, Enron suffered a $60 mil-lion loss in its broadband business. It struggled in more than a dozen unfamiliar industries and crashed within a year.

Questionable partnerships, overaggressive investments and shady accounting practices top a long list of factors in Enron's downfall. But as they look for lessons from history's biggest bankruptcy, executives in all industries are questioning whether they, like Enron, spent so much time turning IT into a profit center that they lost sight of their organizations' core missions.

Is it time to go back to the days when IT supported the business rather than became the business? "I think [Enron's bankruptcy] is going to have a very

> **INSIDE:** Balancing fiscal responsibility and innovation. **PAGE 61**
>
> **ONLINE:** For access to extensive Enron coverage, please visit our Web site:
> **www.computer world.com/q?a1580**

SNMP DEVICES OPEN TO ATTACKS

Security flaws threaten key network protocol

BY JAIKUMAR VIJAYAN

The security of Simple Network Management Protocol services was thrown into doubt last week by a warning that hundreds of hardware and software products with built-in support for SNMP are vulnerable to attack.

Security analysts had blunt advice for IT managers: Fix your SNMP-based installations immediately if you need them and can get patches from vendors, or else shut down the network-monitoring services.

The flaws exist in products from numerous vendors and can be exploited by malicious hackers to launch denial-of-service attacks or gain unauthorized access to systems, according to an advisory from

KNOWLEDGE CENTER: CRM

MICHAEL BARTALOS

Sober CRM

SPECIAL REPORT

For customer relationship management, the irrational exuberance of the past few years — full of vendor hype and massive IT projects — is giving way to smaller projects with quick returns on investment. Many early CRM projects failed, but companies are learning how to get it right on the second or third try. **Special Report begins on page 27.**

Besides the wealth of material in our pages, check out these and other online resources and feature stories in our Knowledge Center on CRM: **www.computerworld. com/q?k1300**

- **Book excerpt:** The right way to pick CRM technology – and grill the vendors.
- **How to sustain** a CRM project through a recession, and other strategic advice.
- **Mazda's effort** to eliminate data silos and get complete customer profiles.

Quick Link

COMPUTERWORLD THIS WEEK

NEWS 6

OPINIONS

ONLINE

Keep E-Commerce in Mind

Companies that are increasing their security spending should take the opportunity to boost security — and buyer confidence — in their e-commerce operations, writes *Computerworld*'s Rick Saia in our Security Community.
www.computerworld.com/security

Start-up Consolidates Security

OpenNetwork Technologies gives Web users single sign-on to applications across the enterprise. See this week's Emerging Companies feature at:
www.computerworld.com/q?27109

Quick Link For breaking news, updated twice daily, visit *Computerworld.com*:
www.computerworld.com/q?q4000

KNOWLEDGE CENTER: CRM

SPECIAL REPORT

27 Sober CRM

The irrational exuberance of the past few years — when customer relationship management (CRM) meant marketing hype and galactic IT projects — is giving way to smaller, tactical projects with quick ROI.

28 The Story So Far *CRM* may be a relatively new buzzword, but it's based on century-old principles of selling.

30 Try, Try Again CRM projects fail more often than they succeed, analysts say. But some companies have gotten CRM to work well, albeit on the second — or third — try.
ONLINE: One CIO offers advice on making CRM work, based on his own rollout experience of the past year. www.computerworld.com/q?26753

32 Kevin Fogarty says CRM systems are too high-concept to work in tough times. But small, tactical improvements will eventually give you the same benefit with much less pain.

34 Picking Winners & Losers CRM systems are enabling more sophisticated customer segmentation, but pitfalls abound, including alienating customers with inappropriate pitches and ignoring others who have current low returns but high potential.
ONLINE: There's a good chance you're spending too much on unprofitable customers while ignoring your best ones. IT can help you get it right.
www.computerworld.com/q?26724

36 ROI: Insights Turn Into Profits Bookseller WH Smith uses a CRM system to track customers' buying patterns and tailor 1,200 stores for greater returns.

40 Q&A: Schwab Sees CRM Payoff Despite a downturn in the investment market, financial services firm Charles Schwab is continuing to invest in its CRM strategy and giving customers a more integrated, personalized experience.

42 Field Report: CRM Analytics Integration difficulties abound, but the payback of using CRM analytics to identify areas for revenue growth, cost-cutting, customer retention and other business needs will lure more companies to invest in these projects.
ONLINE: Setting goals and establishing the right metrics to gauge a project's success are key to analyzing the return of a CRM project.
www.computerworld.com/q?26891

44 All-Star Players In CRM projects, assembling a knowledgeable team is critical. Users and analysts strongly advocate having at least two project managers take the lead: one from IT and one from the business side.
ONLINE: Plenty of IT professionals are looking to latch onto CRM projects. Here are some tips for making your résumé stand out from the rest.
www.computerworld.com/q?26732

46 Profitable Privacy The rapid emergence of new privacy laws in the U.S. and globally is forcing companies to consider whether privacy is more than a legal compliance issue but also a business opportunity.

48 Nicholas Petreley learned the hard way that CRM and security should be inseparable.

ILLUSTRATIONS BY MICHAEL BARTALOS

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WHICH TO CHOOSE?

CRM technology selection should be based on business needs and the software required to meet them — not on vendor demos and marketing hype.
Quick Link www.computerworld.com/q?26865

RECESSION-PROOF YOUR CRM PROJECTS

Keeping a CRM project moving forward in a tight economy — and achieving return on investment — is no easy task. Here's advice from several experts.
www.computerworld.com/q?27180

MAZDA WANTS 360-DEGREE VIEW

Mazda's CRM manager describes the automaker's initiative to eliminate the data silos and duplication of effort that can confuse customers.
www.computerworld.com/q?27181

NEWS

Cybercrime Reporting Procedure Draws Fire

Some experts worry that guidelines may require CIOs to reveal too much to feds

BY DAN VERTON

THE FBI AND THE Secret Service last week announced support for a controversial set of standard procedures that businesses can use to report serious hacking incidents and other Internet-related crimes.

A panel of federal and private-sector security experts, including Howard Schmidt, the newly appointed vice chairman of the president's Critical Infrastructure Protection Board, helped draft "The CIO Cyberthreat Response & Reporting Guidelines." The effort was cosponsored by *CIO Magazine*, a sister publication of *Computerworld*.

The guidelines instruct CIOs to report only major incidents that result in damage to property or loss of significant revenue or that indicate a noteworthy trend or new type of attack. According to the guidelines, companies shouldn't "report routine probes, port scans or other common events," because law enforcement simply doesn't have the resources to investigate those incidents.

Some experts wondered if the reports IT groups file will be as useful as closing the gate after the horse has already left the barn. "Will they be able to stop or recognize malicious acts before damage is done, or before we fill out these forms?" asked Steven Sommer, CIO at Hughes Hubbard & Reed LLP, a law firm in New York.

Probably not, said Keith Morgan, chief of information security at Terradon Communications Group LLC, a Nitro, W.Va.-based content management company. "If you want really useful information, log and track the scans," said Morgan. "The scans tell you what systems are actively searching the net for vulnerable hosts. The information that may be of the most value is exactly what they're asking you not to send."

There's also concern that the level of reporting and information-sharing necessary will remain elusive as long as the government continues to ignore industry's need to protect proprietary data from potential exposure under the Freedom of Information Act (FOIA).

"Without assurances of how this information will be handled, I would advise enterprises to avoid this like the plague," said John Pescatore, an analyst at Gartner Inc. in Stamford, Conn. "The information on the form is a hacker's and [news] reporter's dream. We still have no definition about Freedom of Information requests. Will this information be exempt from FOIA? Antitrust? It seems like a very unnecessary effort until all of this is defined."

Sommer said he has similar concerns about the use of information provided to the government. "The real question is, What will they do with the information?" he asked.

"We are not interested in highlighting the vulnerabilities of a company's system," said James Mackin, a spokesman for the Secret Service. "Underreporting of these crimes is unfortunately the norm, and we are trying to take steps to improve in that area." ▶

New Guidelines

WHAT YOU SHOULD REPORT
- Incidents that result in real damage, financial loss or the insertion of malicious code
- Any incident that indicates a new trend or attack method
- Any IP address that is the source of persistent attacks

WHAT YOU SHOULDN'T REPORT
- Routine probes
- Port scans
- Other common events

SafeWeb Users Vulnerable

Attacks could expose identities of political dissidents, CIA users

BY DAN VERTON

SafeWeb Inc., a developer of online privacy technology used by consumers, political dissidents and government agencies, including the CIA, last week said there are security gaps in its software that could put the identities of users at risk.

The flaws, discovered by David Martin, a computer science professor at Boston University, and Andrew Schulman, a researcher at the Privacy Foundation in Denver, stem from the way the SafeWeb software handles JavaScript and its use of master cookies, which store cookie information from multiple sites. Using a series of attacks, the researchers showed how they were able to trick a Web browser into divulging a user's IP address and cookie information, and they also installed spyware for the duration of the SafeWeb session.

"We have found that the SafeWeb service is seriously and fundamentally flawed," said Schulman. "We're not talking about a few implementation errors or imperfections. Our paper documents spectacular failures of the service, based on extremely simple attacks."

Computerworld's investigation into Schulman and Martin's study ignited a series of e-mail exchanges between the researchers and executives at Emeryville, Calif.-based SafeWeb and prompted the company to issue a public press release Feb. 13 in which it acknowledged the security flaws.

SafeWeb was aware of the problems as early as last year, said co-founder and CEO Stephen Hsu, but the company decided not to develop patches after abandoning its consumer business and licensing its technology to Los Angeles-based PrivaSec LLC in August.

In a statement, PrivaSec CEO Geoffrey Riggs acknowledged that "there are certain vulnerabilities to SafeWeb and SurfSecure secure surfing technology" and added that the company is working to develop patches. However, PrivaSec claims that the "likelihood of such an attack on a user living in a free, non-politically-repressed society is relatively low."

Martin characterized PrivaSec's explanation as security through obscurity. "Frankly, I can't think of any other security system that is considered secure by nature of it being unlikely to be attacked," he said.

SafeWeb is used by thousands of politically oppressed people around the world to shield their Web activities. ▶

AT A GLANCE

What's Wrong

- SafeWeb **master cookies** can be intercepted.

- Although **PrivaSec implementation deletes master cookies,** users are safe only if cookies are disabled in the browser.

- **JavaScript vulnerabilities enable spyware** to be inserted, capturing all Web addresses visited by a user.

- SafeWeb stockpiles user Web activity in a domain under its control and protection. **JavaScript vulnerabilities make this data and users possible targets.**

Spam Taking a Toll on Business Systems

Some IT managers are battling spammers, but others say the fight is too expensive

BY JENNIFER DISABATINO

Raymond Huff doesn't do much to block spam from invading servers and e-mail inboxes at his company, Trans Pacific Stores Ltd. He doesn't have to.

But he's paying a fairly high price for that luxury. Huff is keeping Trans Pacific's e-mail addresses under wraps, thereby limiting potential customer contact.

"We don't get that much spam coming into our system because we don't give out our e-mail addresses" to anyone other than business associates, said Huff, vice president of the Lakewood, Colo.-based provider of snacks and sundries to office buildings. In fact, the company avoids publishing e-mail contact information on the Internet, and employees are encouraged not to release their e-mail addresses. And it's all because of spam, Huff said.

The recent proliferation of unsolicited commercial bulk e-mail, commonly known as spam, has end users and network and messaging administrators scrambling for ways to be rid of the bogus, lewd and annoying electronic messages that can flood user mailboxes and cripple networks.

Beyond the technology issues, companies are concerned about messages that are inappropriate, if not downright offensive, in a business environment.

"We don't want the lewd pictures — my wife doesn't need a penis enlargement, and I don't need breast implants," said Bob Kramer, owner of CIS Internet Services, a small Internet service provider in Clinton, Iowa. Kramer's problem is that his company has been hi-

jacked. His domain has become a favorite for spammers to spoof in the "to" and "from" fields, and the sheer volume of spam that moves through his servers as a result has nearly crippled his business, Kramer said.

Brightmail Inc., a San Francisco-based developer of spam- and virus-blocking software, measures spam attacks — blasts of unsolicited e-mail messages to many addresses from a single source. According to its research, such attacks increased from 148,100 in January 2000 to 2.8 million last month. HiWaay Internet Services in Huntsville, Ala., meanwhile, puts the number of spam messages it blocks per minute at about 150, which equates to 78.8 million per year.

That surge has moved some companies to take drastic action. For Todd Meagher, co-founder of Credit.com Inc., the potential loss of legitimate business correspondence inherent in blocking spam is an acceptable price to pay to keep his network spam-free.

Credit.com is a credit information and services company in Alameda, Calif., that has also been the victim of domain spoofing. Meagher uses a combination of filtering devices and blocks at the router to keep unwanted traffic out. Unfortunately, it also keeps some legitimate messages out.

"The trouble is, almost all filters today work using simple keyword-matching approaches, when what's needed is something with more natural language interpretation intelligence," said David Ferris, president of Ferris Research Inc. in San Francisco. "Otherwise, any reasonable attempt at defining filters ends up either letting much too much in that you don't want in, or stopping bona fide messages."

"That's the price you pay," Meagher noted. "There's no clean solution yet."

As unsophisticated as existing tools are, people will pay for them, Ferris said.

"One reason people will pay

for antispam services is because of the false positives. You'll be charging through, deleting a whole load of spam, and in the rush you'll inadvertently delete important things that superficially look like spam but aren't," he said.

"Another reason is that many users will have restrictions on their mailbox sizes for the foreseeable future," Ferris said. "A flood of spam can cause the message store space to run out, in which case new bona fide incoming e-mail will be refused."

Using existing tools, as crude as they may be, is the only solution now, because spammers aren't easy to identify.

"The biggest problem about spam is that the people who do it lie," Kramer said. They hide behind false addresses, relay messages through "open relay" e-mail servers, many of which are located offshore, and generally make it difficult to find a person or organization that could be held accountable. ▶

Antispam Legal Burden Rests With Affected Corporations

In the wee hours of the morning one day last month, a spammer began using a Microsoft Exchange server at Arrow Products Inc. to send bulk e-mail to Yahoo, Hotmail and other accounts. It's possible that the spammer had sent several thousand e-mails through the network by the time the IT department cut off the server's forwarding capability, said IT manager Richard Eggleston.

Eggleston wasn't happy. The idea of taking legal action crossed his mind, he said, but he dismissed it because of the cost and time it would require.

"It's enough to just get our normal work done and shut down something like that," said Eggleston, whose Elkhorn, Wis.-based company manufactures wood products. Just as when dealing with viruses, "there is just so much you can do," he said.

Eggleston is hardly alone. Corporations, with the exception of In-

ternet service providers, generally aren't taking legal action against spammers, despite the emergence of antispamming laws in 19 states. But relying on technology rather than legal action may not be enough to combat spam. And it may be a risky strategy.

With few exceptions, state law enforcers aren't taking action against spammers. Officials see state antispam laws primarily as enablers of private lawsuits.

"It's one of those situations in consumer law where the burden of protection is on the consumer – if they can figure out who sent the spam," said Joanne McNabb, chief of the privacy protection office at the California Department of Consumer Affairs in Sacramento.

And while the Federal Trade Commission last week said it was stepping up its antispam enforcement, there's some skepticism about just how far federal authorities can go.

FTC officials characterized the move as a new initiative to crack down on spam – one that will go after deceptive e-mail claims and headers, fake opt-out links and other devices. These messages are "intrusive, unwelcome and annoying," said FTC Chairman Timothy Muris. "We want it off the Net."

But Ray Everett-Church, counsel for the Coalition Against Unsolicited Commercial E-Mail in San Jose, said he has yet to see the FTC pursue cases that "require a little more depth of investigation and greater resources and a little less of a slam-dunk." For instance, the FTC could take action against people and companies that sell the software used to create forged headers and hijack e-mail servers, he said.

Without aggressive enforcement by federal or state authorities, the enforcement burden will rest with businesses, experts say.

"If somebody doesn't stand up and start taking action, [the spam-

mers] . . . will just move on to the next corporation," said Walter J. Yurkanin, an IT attorney at Mahoney, Silverman & Cross Ltd. in Joliet, Ill.

Businesses may have no choice but to get involved. In the case of a hijacked server used to forward spam, for instance, it's possible that a spam recipient could name the business that owns the server in a lawsuit, said Yurkanin. "If a corporation has potential liability somewhere down the road, they are going to have to take action," he said.

And cases of private litigation are emerging. Timothy Walton, an Internet attorney in Palo Alto, Calif., is an antispam trailblazer who has brought what may be one of the first class-action lawsuits against spammers. He won an appeals court victory last month, allowing his lawsuit to continue.

"I would love to see the government deal with this problem," Walton said. "But since I don't see it happening, private litigation is the next option."

– Patrick Thibodeau

Users Weigh Microsoft Development Options

Some firms lean toward rewriting, not migrating, applications with new tool

BY CAROL SLIWA
SAN FRANCISCO

MIGRATION tools are available to help developers port their existing applications to the new Visual Studio .Net environment that Microsoft Corp. launched here last week. But some corporate developers said they don't intend to use them.

Several developers attending Microsoft's VSLive conference here said they plan to rewrite their applications rather than port them to the new environment, which they noted represents substantial change for Visual Basic users, who will have to adapt to the new tool's object-oriented programming model. Some said they will leave their existing applications running in the old Visual Studio 6 environment and use Visual Studio .Net only for new applications.

"The stuff that's out there already works well," said Sam Cooper, a senior programmer at Safeco, an insurance firm in Redmond, Wash., noting that he sees no reason to migrate existing applications.

Frank Gillett, an analyst at Cambridge, Mass.-based Forrester Research Inc., said one of the most compelling reasons for a user to switch to the .Net environment is to enable Microsoft applications to communicate with non-Microsoft applications via XML-based Web services. But if they have no need for that functionality or any of Visual Studio .Net's new features, they should leave their existing applications alone, he said.

Gillett does, however, recommend that corporate users reconsider their commitment to Microsoft's development environment, since the new tool represents such a major step for Visual Basic users.

"The effort required to [switch to .Net] is similar to the effort required to switch to Java," Gillett said. "So if you're going to make the effort to step up to full distributed computing and object-oriented programming, stop and reconsider, 'Should I switch to Java?'"

Examining the Alternatives

Keith Covington, director of Internet technology at GameStop Inc., a Grapevine, Texas-based retail chain with more than 1,000 stores, said his company will decide within the next month whether it will move its Visual Basic applications to Microsoft's .Net tools or switch to Java.

Covington noted that GameStop is a Microsoft-centric shop and has people with Microsoft skills in-house. But it must weigh the pros and cons of trying Microsoft's new tool, which is "not as mature as some other options" and would mean change for the firm's developers, he said.

"They're going from a procedural, functional-based programming model to object-oriented, and that's not an easy leap to make," Covington said. "Do you bet the business on applications you're deploying on the .Net framework with a developer base who is new at this technology?"

Microsoft group product manager John Montgomery claimed that some early adopters moving from Visual Basic to Visual Basic .Net have told his company that it's "not the major change people think it is." He said the new tool is "building on 10 years of experience that we have bringing customers up to speed."

Lilya Epstein, a systems developer at Montgomery Watson Harza Inc., a Pasadena, Calif.-based waste-water management company, said her personal preference is to stick with Visual Basic rather than switch to another programming language.

But Epstein said she will try to migrate applications before rewriting them in order to preserve the time and effort she put into building objects in Microsoft's Component Object Model. "When you work for six, seven years, you've got a lot to lose," she said.

In contrast, Steve Sommer, CIO at Hughes Hubbard & Reed LLP, a New York law firm with 1,100 employees, said he plans to have his developers gradually shift the financial, document management, mail, database and Web applications from Visual Basic to C#. "The way it compiles is much quicker because it's native to .Net, and to me, that's where the future lies for programming within .Net," he said.

Sommer estimated the price tag for the move at $3 million to $4 million, not including hardware. But he said he thinks it will be faster and less expensive to start from scratch rather than convert the Visual Basic applications to C#, a process he doesn't believe produces "solid code."

Daniel Appleman, president of Campbell, Calif.-based Desaware Inc., which makes add-on components and tools for Visual Studio, advised conference attendees not to port their code unless there's a good economic justification.

"A lot of people will be doing Visual Basic 6 code for some time," he said. "Just training costs will be substantial. We are at the start of a big and long transition. This transition is comparable to the transition from 16-bit to 32-bit Windows. .Net's a big deal, but big deals don't happen overnight." ▶

Analysts Suggest Slow .Net Migration

Corporate developers are being advised to take a gradual approach if they migrate existing applications to Visual Studio .Net, and a cautious approach if they build new applications.

"If you're talking about a high-profile, fairly complex application, you probably would be best served to stick with what you know," said Thomas Murphy, an analyst at Stamford, Conn.-based Meta Group Inc. He said Meta advises clients to take a subset of their existing applications and bring them into the .Net environment only if there's a compelling reason to move them.

For instance, users might want to move a Web application to Visual Studio .Net to gain the benefits of the improved architecture, performance and scalability of Microsoft's new Active Server Page .Net technology. But they probably wouldn't want to rewrite a Visual Basic client/server application in Visual Studio .Net, he noted. "Your ROI is going to be fairly low," Murphy said.

Murphy suggested that users try to run a few of their existing applications in the new development environment to get an idea of the number of lines of code they will need to fix.

But Chuck Grindel, a software engineer at Boston-based NaviMedix Inc., a provider of online applications to connect physician offices and hospitals with health care partners, said he doesn't see "anything real compelling" to make his firm rush to the new tool.

On a personal level, Grindel said he's interested in Visual Studio .Net's ability to let developers work in more than 20 languages when they run the applications through Microsoft's Common Language Runtime.

But from a management standpoint, Grindel said he can't see a company letting its developers work on the same code base in different languages. "Maintainability of components becomes a lot more difficult," Grindel said. "If somebody left, you would have less flexibility. . . . And if I needed to take a programmer to help out on another project, I might be hindered if they don't know the language of the other project."

Murphy said he thinks many firms will run mixed environments, developing applications with both Microsoft and Java tools. He foresees Visual Studio .Net being used to build clients, department-level applications and Internet-based applications, with Java as the choice for business frameworks and components that need to run on different operating systems.

– Carol Sliwa

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Microsoft Warns of Six Holes in Browser

Microsoft Corp. released a software patch that's designed to fix six newly discovered security holes in its Internet Explorer (IE) Web browser. The most serious vulnerability could let attackers run malicious code on unprotected systems, said Microsoft, which assigned a "critical" severity rating to that flaw. The patch should also plug all other known IE holes, the company said.

Dell Profit Rises Despite Sales Drop

Dell Computer Corp. reported net income of $456 million for its fourth quarter ended Feb. 1, up 5% from the year-earlier total of $434 million. But fourth-quarter revenue declined 7% year over year to $8.1 billion, and Chairman Michael Dell predicted that sales will fall by as much as 5% during the company's first quarter. Even so, Dell said he expects to gain market share.

HP Numbers Beat Original Expectations

Hewlett-Packard Co. said profits for its first quarter ended Jan. 31 totalled $484 million on revenue of $11.4 billion, as business dropped 8% from $12.4 billion in the same period last year. The results were better than originally anticipated, but HP said it expects second-quarter revenue to decline "modestly" from the first-quarter level, partly due to slow spending by corporate users.

Short Takes

CISCO SYSTEMS INC. announced higher-throughput versions of its PIX 506 and 515 Firewall devices, plus an upgrade of the software that comes with the systems. . . . Employees at Sunnyvale, Calif.-based ARIBA INC. presented the FIRE DEPARTMENT OF THE CITY OF NEW YORK with a new fire truck after raising $350,000 to pay for it.

Gates May Take the Stand in Antitrust Case

Microsoft considers calling chairman, Ballmer to defend it during remedy phase

BY PATRICK THIBODEAU
WASHINGTON

By putting its top executives on the potential witness list for the remedy phase of its antitrust battle with nine states and the District of Columbia, Microsoft Corp. is on a risky yet necessary path, legal experts say.

Last week, the company and the states submitted separate lists naming a total of 50 possible witnesses. Microsoft's list included Chairman Bill Gates and CEO Steve Ballmer.

Will Evans, CIO at Peoples Energy Corp., a Chicago-based utility, said Gates and Ballmer should testify. The two executives "are responsible," Evans said. "They run the company. They are the people on deck; let them come in and testify."

But Evans added that he sees the antitrust case as a waste of money and believes the government should let the market take care of competition. "What benefit is the consumer going to have? I don't think there is any benefit. They just changed their [enterprise] licensing fees and stuck it to us. The direct opposite has happened," said Evans. "Get over it. They are in charge."

Executive Stress

The nine states placed the officials of all Microsoft's major competitors on their witness list for the remedy phase, which is due to begin March 11. For its part, the company may bring to the stand executives from more than a dozen vendors and users, as well as its own top leadership.

Gates didn't testify in the trial, but the government played videotaped portions of his deposition, taken out of court over three days with government attorneys. It showed the Microsoft chairman behaving defensively and evasively and conceding little to the attorneys. Legal experts uniformly panned his performance.

Microsoft, however, may have realized that it needs Gates to testify now, said Hillard Sterling, an antitrust lawyer at Gordon & Glickson LLC in Chicago.

"Bill Gates remains the heart and soul of Microsoft," Sterling said. "This case goes to the core of Microsoft's business conduct. Microsoft simply needs Gates to maintain its credibility and explain its business conduct."

If Gates testifies, it will be during the remedy phase sought by the nine states that have refused to accept the proposed settlement agreed to by nine other states and the U.S. Department of Justice (DOJ) in November. The dissenting states — California, Connecticut, Florida, Kansas, Iowa, Massachusetts, Minnesota, Utah and West Virginia and the District of Columbia — are seeking tougher remedies than are called for in the DOJ deal. The holdouts' proposals include a requirement that Microsoft create a thin-client version of Windows, stripped of most of its applications, as well as the porting of Office to other operating systems, such as Linux.

While there is a risk that Gates won't fare well under cross-examination, Andy Gavil, an antitrust professor at Howard University School of Law in Washington, said it's less of a risk than Microsoft would have faced in the initial trial.

The upcoming phase is "going to be focusing on remedial questions, so there is less of a danger that [Gates] will be embarrassed by inconsistent e-mails," said Gavil.

In allowing many witnesses and many days of testimony — perhaps a month or more — U.S. District Court Judge Colleen Kollar-Kotelly may be

signaling unhappiness with the proposed settlement, said John Kwoka, a economics professor at Northeastern University in Boston. On the other hand, she may feel that the settlement is adequate but wants to give latitude to the critics, he said. ▶

Terrorists Look for Info on Web, Says Fed Cyberchief

White House wants 64% boost in federal IT security spending

BY PATRICK THIBODEAU
WASHINGTON

While promoting the Bush administration's plan to boost the government's IT security spending, Richard Clarke, the nation's cybersecurity chief, warned Congress that terrorist groups are surfing the Web for information about how to target attacks against U.S. corporate facilities.

Clarke also told the U.S. Senate Judiciary Committee last week that security approaches at government agencies would soon change.

The White House wants to increase IT security spending from $2.7 billion to $4.2 billion. That 64% increase would bring total IT security spending to 8.1% of the federal government's proposed $52 billion IT budget for next year.

Referring to the percentage of IT spending that the proposed security expenditure represents, Clarke said, "If that could be said of other institutions, particularly companies in the private sector, we wouldn't have this problem [with security]."

The average share of private-sector IT spending that goes to security is in the range of 3% to 5%, said Chris Christiansen, an analyst at Framingham, Mass.-based research firm IDC.

"If people doubled their spending, it would go a long ways," he said. "Would it solve the problem? No."

Christiansen said more comprehensive solutions are needed. Even Clarke acknowledged that IT systems have a long way to go, noting that most critical manufacturing, utility and financial operations depend on systems that "were never designed with security in mind."

Clarke, who heads the White House's Office of Cyberdefenses, also warned that al-Qaeda and other terrorist organizations have examined cyberattack possibilities. He said evidence found in caves in Afghanistan shows that al-Qaeda "was using the Internet to do at least reconnaissance of American utilities and American facilities."

Clarke said al-Qaeda was gathering useful information from public Web sites.

"If you put all the unclassified information together, sometimes it adds up to something that ought to be classified," he said. ▶

NEWS

Calif. City Plans Wireless LAN For Critical Communications

Glendale's choice based on lower cost, higher throughput than cellular data

BY BOB BREWIN

GLENDALE, CALIF., has decided to use wireless LAN technology to provide high-speed data service to its police, fire and public works departments after determining that cellular mobile data services cost too much and deliver too little.

Scott Harmon, assistant director of information services for the city, which is located in the foothills of the San Bernadino Mountains northwest of Los Angeles, said the Cellular Digital Packet Data (CDPD) services available from cellular carriers provide 19.2K bit/sec. throughput at best. That isn't enough to support high-bandwidth applications, such as the transmission of mug shots to patrol cars.

"It's definitely a bandwidth issue with us," Harmon said, adding that in his opinion, CDPD didn't provide the throughput needed to support other bandwidth-hungry applications, such as a geographic information system used by the public works department.

Harmon decided to try to leverage the high throughput of wireless LAN technology to a citywide system. Roy Dube, a consultant at New York-based PwC Consulting, called the approach "truly intriguing" and a sign that wireless LANs are starting to make inroads in markets that cellular carriers, which offer wide-area service, viewed as their own.

The monthly fees for CDPD service also turned him off, Harmon said. He declined to provide specific costs for the wireless LAN system, but Craig Mathias, an analyst at Farpoint Group in Ashland, Mass., called wireless LAN costs "insignificant" compared with CDPD monthly charges. Mathias said Glendale could pay about $2,500 per access point, or a total of $75,000 for 30 sites, compared with monthly CDPD airtime charges that run $30 to $50 per month for each of the 200 units the city initially intends to deploy on the system.

Harmon tapped PAI Systems Inc. in San Clemente, Calif., to help build a network that will blanket 85% of Glendale's land area; the other 15% is uninhabited territory on steep mountain slopes. Glendale has already installed two wireless LAN access points, and Harmon said the city will need "between 20 and 30" for high-speed connectivity in its inhabited areas.

Arthur Daley, vice president of marketing at PAI Systems, said he decided to use 802.11 wireless LAN equipment from Tel Aviv, Israel-based Alvarion Ltd. to support Glendale's plans. The 802.11 standard provides only 1M bit/sec. throughput compared with the 11M bit/sec. bandwidth of 802.11b Wi-Fi gear, but it offers a much wider range, Daley said.

Since the security of wireless LAN systems — especially those used by public safety agencies — is a critical concern, Daley plans to beef up Glendale's citywide system with software from Ecutel Inc. in Alexandria, Va.

Ecutel will provide each mobile user with triple Digital Encryption Standard virtual private network tunnels, as well as mobile IP protocols to enable easy roaming among access points.

Dube said the citywide wireless LAN deployment is another example of the technology encroaching on high-speed mobile data services from cellular carriers. Those carriers, in turn, have started to embrace the technology as an adjunct to their wide-area systems. The real threat of a Glendale-type wireless LAN system to cellu-

GLENDALE, CALIF., is using antennas such as the one above for access points to its wireless LAN.

lar service will come when such a system is opened up to the greater populace, not just a core group of municipal employees, Dube said. ▶

Energy Dept. Runs Security Tests on Wireless LANs

Sandia Labs weighs advantages, risks of technology

BY BOB BREWIN

Sandia National Laboratories has begun testing wireless LANs to determine whether they can meet the kind of rigorous security required for Department of Energy facilities.

Pace VanDevender, CIO at Sandia, said the lab has started limited testing of wireless LANs in an isolated test bed outside secure areas because, in his view, "wireless is the wave of the future."

VanDevender said that although Sandia currently has a ban on all wireless networks, the ability of wireless LANs to allow access to data anywhere without the need for Ethernet cabling makes a compelling business-process case.

The Albuquerque, N.M.-based lab also has facilities in California.

Sandia's approach contrasts sharply with a temporary ban on wireless LANs instituted last month by another DOE lab, Lawrence Livermore National Laboratory in Livermore, Calif. Los Alamos National Laboratory in New Mexico has also started a security review of its wireless LANs that could result in their elimination, according to spokesman Kevin O'Rourke.

O'Rourke said Los Alamos currently operates wireless LANs in three buildings outside secure areas. He said that he didn't know when a decision would be made, adding that the issue of wireless LANs and security at DOE facilities may be driven by policy at the national level.

VanDevender said that despite security concerns, wireless LANs "make it much easi-

er to use and share information in an ad hoc and spontaneous way." Potential new hires who come from college campuses with a robust wireless LAN infrastructure want to work in an environment where they can be "online all the time," he said.

VanDevender added that campuswide wireless LANs could lead to changes in busi-

AT A GLANCE

Wireless LANs in Labs

The Department of Energy has said that it's wary of wireless LANs for security reasons. Different labs are taking different approaches to the technology:

DOE forbids use of wireless systems in highly classified areas of all its labs.

Los Alamos National Laboratory has an ongoing security review of wireless LANs that could result in their elimination. Los Alamos currently operates wireless LANs in older buildings outside restricted areas.

Lawrence Livermore National Laboratory put a temporary ban on wireless LAN usage last month, pending completion of a security review.

Sandia National Laboratories has begun limited testing of wireless LANs outside classified areas.

ness by providing connectivity that's used for collaborative work and decision-making.

Dennis Eaton, chairman of the Wireless Ethernet Compatibility Alliance in Mountain View, Calif., said VanDevender's experience reflects the impact of early adoption of wireless LANs by colleges and universities. "A younger generation has grown up with this kind of technology always at its disposal," Eaton said.

VanDevender said Sandia is running its small-scale test of wireless LANs to better understand security issues about a technology that has been proved to be inherently insecure. He declined to identify what security issues Sandia is examining or what kind of add-on products are being tested.

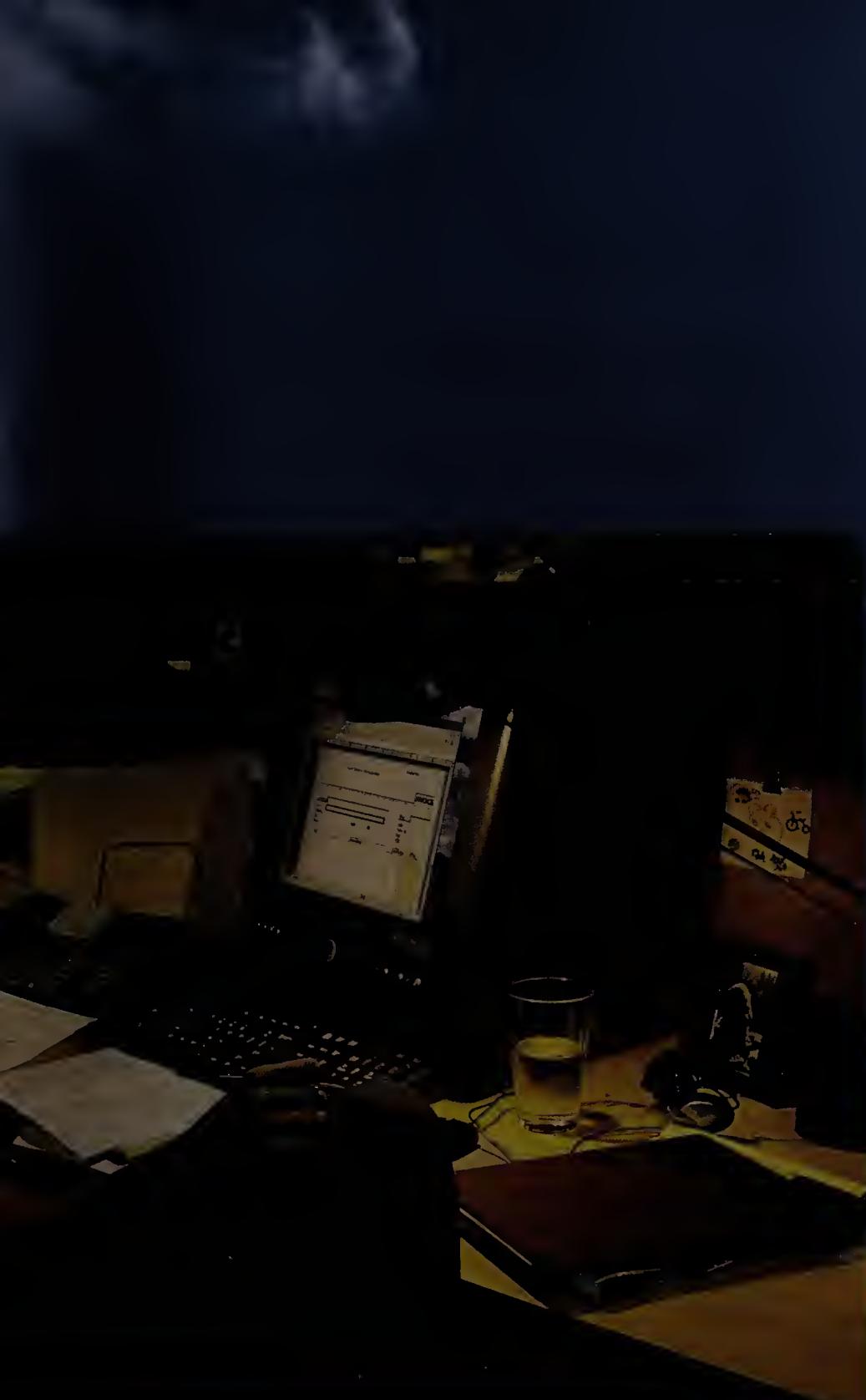Wireless LANs that cover entire corporate campuses or widely scattered research facilities, as in the case of the DOE labs, can "fundamentally change behavior patterns in the way people do their business," Eaton said. But those advantages must be weighed against the sensitivity and security of data sent over the network, he added. ▶

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BRIEFS

HP Lowers Prices on Low-End Servers

Hewlett-Packard Co. cut prices on some of its Intel-based servers and server appliances by 11% to 31%. The affected systems include HP's high-density LP1000r and LP2000r models, which are designed for Web hosting uses and applications such as serving cached data to end users. HP said the price cuts were driven by competitive pressures and cost reductions.

IBM Readies Memory Booster for Systems

IBM said it plans this month to add new memory-expansion technology to its line of Intel-based servers. The technology includes an algorithm for encoding data that makes a system's physical memory appear to be double its actual size, IBM said. Santa Clara, Calif.-based ServerWorks Corp. has licensed the technology for possible sale to other server vendors.

Patch Issued for BlackIce Firewall Hole

Atlanta-based Internet Security Systems Inc. released a patch to fix a denial-of-service security flaw in the Windows 2000 and XP versions of its BlackIce Defender firewall software. The flaw, called a ping flood vulnerability, lets attackers crash unprotected systems by sending a large number of data packets to them.

Short Takes

Phoenix-based semiconductor distributor **AVNET INC.** hired Robert Mason as its CIO, effective March 4. Mason previously worked as CIO at New York-based **CENDANT CORP.** . . . The **INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS** in Marina del Rey, Calif., named Stephen Crocker to head a new Internet naming-system security committee.

Retailers Mull Pulling Plug on E-Commerce

Some execs say harsh economy may lead some firms to scale back Web presence

BY CAROL SLIWA
SAN JOSE

FEDERATED Department Stores Inc. stunned the retail world late last year when it ceased selling merchandise on its Bloomingdales.com site.

At last week's eTail 2002 conference here, some retail executives and experts predicted that more traditional retailers may pull the plug on their e-commerce sites this year — or at least re-evaluate and scale back investments in online operations.

They said the harsh economy is forcing retailers to take a harder look at their Internet commerce operations, which were expensive to launch and can be costly to maintain. For most retailers, online sales still represent a very small fraction of overall sales.

The ROI Factor

"I think there's going to be some fallout. It'd be naive to think there isn't going to be," said Brian Kilcourse, CIO at Longs Drug Stores Inc. in Walnut Creek, Calif., noting that he expects to see some retailers shut down their e-commerce operations.

He said one problem is the high cost of entry for e-commerce. "You need to spend $20 million to get the beginnings of a Web offering — well, in our case, that's four or five stores," Kilcourse said. "So one of the things the CFO will ask, rightly, is, 'Am I going to get four or five stores' worth of ROI out of this investment?'"

But Kilcourse added that retail executives need to keep in mind that a Web presence is intended to build their brand, not merely generate sales.

Ralph Briskin, director of e-commerce at The Men's Wearhouse in Houston, said he doesn't see how major retailers' e-commerce sites can "be profitable on this year's basis or this month's basis or today's basis, let alone pay back on the investment they've made."

"This is not like going into a store and putting up some fixtures and then they stay there for years on end," he said.

Dyan Triffo, a financial analyst at Deutsche Bank Alex. Brown Inc. in New York, said retailers are facing tremendous pressure to focus on the bottom line. "The economic environment is forcing people to make strategic decisions about what areas they can cut, where they can save money," she said, "and [e-commerce] is an obvious area to look at first because it's the newest [and] it's taking a lot of money out of the budget."

"A lot of companies are realizing they spent a lot of money on this channel and haven't necessarily gotten anything out of it," Triffo said.

A storefront or Yellow Pages-type presence might be adequate for some retailers, but others face tough choices if their customers have come to expect transaction-based sites, Triffo said.

Debate continues about Federated's decision to halt e-commerce on Bloomingdales.com. Geri Spieler, an analyst at Gartner Inc. in Stamford, Conn., said scaling back a site to offer fewer items, as Federated did with Macys.com, makes sense. But pulling the plug on the site was a "knee-jerk reaction" and a "huge mistake," she said.

"It was very, very shortsighted, because they have to relaunch it and differentiate it all over again, which is a lot of money," Spieler said, adding that she doesn't think other retailers will start pulling e-commerce from their sites.

Larry Promisel, manager of Internet marketing at New York-based luxury retail company Coach Inc., said retailers should scale back their sites rather than shut them down. "Every initiative we do is at least profit-neutral," he said.

For instance, the company once nixed a potential investment in live chat because it couldn't prove that the investment would pay off.

"There was no analytical data, and it was just too expensive and too time-consuming from a customer service standpoint," Promisel said. He noted that Coach would have had to train sales representatives and install and test the software.

Coach is reconsidering live chat, with plans to do tests on a small scale to see whether it will help the company close more sales, he said. ▶

Retail Sales

E-commerce sales typically account for about 1% of total retail sales, as shown in preliminary Q3 2001 results:

Total sales:	**$786.6 billion**
E-commerce:	**$7.5 billion**
E-commerce as a percentage of total sales:	**0.9%**

SOURCE: U.S. DEPARTMENT OF COMMERCE

Lane Bryant Web Site Pays Off Without E-Commerce

In contrast to the scores of retailers struggling to turn a profit on their e-commerce operations, Lane Bryant claims that it's making money even though it doesn't sell any merchandise from its Web site.

The Reynoldsburg, Ohio-based women's apparel retailer spent less than $500,000 on its Web site last year, yet it traced $21.2 million in store sales to the electronic coupons and bar-coded gift certificates it e-mailed to registered customers, according to Jennifer Campbell Peterson, director of brand development.

Gift certificate sales grew 20% from 1998 through 2001, with $500,000 of the $3 million in total sales via the Web site, she added. "We're scrappy," Campbell Peterson said. "We don't have a big budget. We use guerrilla tactics to get a huge bang for our buck."

Lane Bryant launched its site in 1997 as a tool to help it change its image as a "dowdy brand for grandma," Campbell Peterson said. Now, the e-mail database contains more than 1 million names, and the site logs 700,000 unique visitors per month, with its ChickChat customer forum attracting the most usage.

The site's 3-D virtual models have drawn 250,000 people to try on clothes displayed through the site, and 387 television stations have aired news stories about the site, including 52 in major markets, according to brand development manager Becki Rundels. One recent webcast of a Lane Bryant fashion show, featuring the rock band Kiss, drew 65,000 viewers.

Data analysis has shown that 40% of the Web visitors are new customers who haven't made a trackable purchase in any of Lane Bryant's 653 stores or turned up on any direct-mail lists, Campbell Peterson noted. She said Lane Bryant would love to make its site transactional because surveys have overwhelmingly shown that customers "want it so desperately." And she said she has even started to sense some customers harboring "a little incredulous attitude that we don't have one."

But e-commerce wasn't an option under Lane Bryant's former parent company, The Limited Inc. in Columbus, Ohio, which hadn't made it a priority, Campbell Peterson said. The new owner, Bensalem, Pa.-based Charming Shoppes Inc., has shown interest in making the site transactional, and Campbell Peterson hopes Lane Bryant will launch e-commerce next year.

"For certain types of goods and services, consumers are really beginning to expect that," said Dyan Triffo, a financial analyst at Deutsche Banc Alex. Brown.

— *Carol Sliwa*
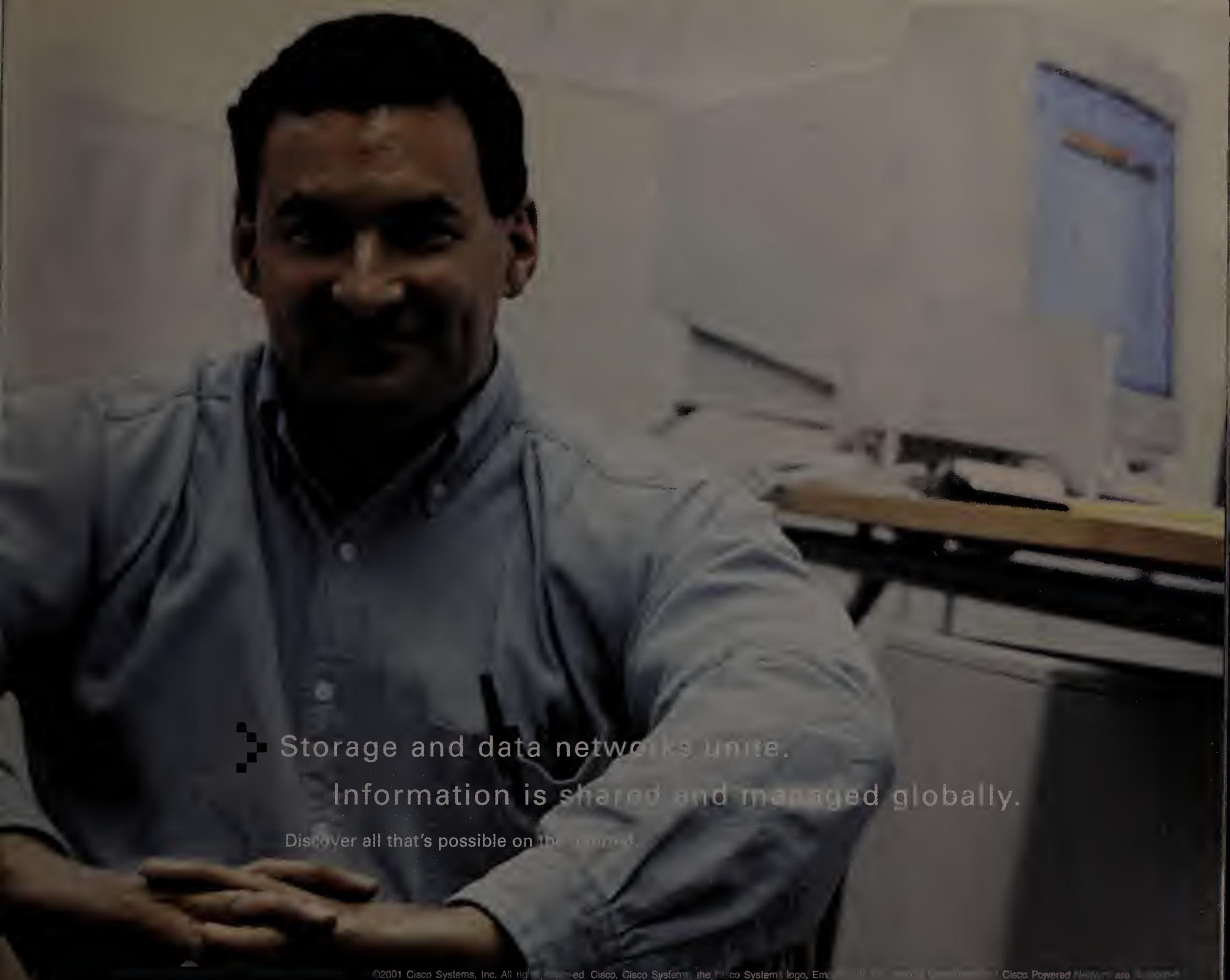
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Security Firm Alleges Flaw in .Net Compiler

Microsoft rejects claim, defends Visual C++ tool

BY TODD R. WEISS

A DISPUTE broke out last week between Microsoft Corp. and a security consulting firm over the safety of using a feature in the compiler that comes with Microsoft's new Visual C++ .Net development tool.

Dulles, Va.-based consultancy Cigital Inc. said the security feature can result in developers unwittingly creating programs that are vulnerable to buffer overflow attacks. But Microsoft rejected that claim and said the feature, called a /GS switch, "introduces no security vulnerabilities into applications."

Gary McGraw, chief technology officer at Cigital, said the switch is supposed to protect applications against buffer overflows caused by malicious hackers. Instead, Cigital said in an announcement, the mechanism "itself is susceptible to a buffer overflow attack." As a result, the consulting firm added, developers who use the feature "may come away with a false sense of security and unintentionally discount critical implementation problems."

McGraw said the switch is the only part of the compiler that appears to be a problem. The rest of the Visual C++ .Net and Visual C++ Version 7 compiler is fine from a security standpoint, but "that one feature shouldn't be used," he said.

However, Microsoft said in a written statement that its documentation spells out that the switch wasn't designed to prevent buffer overflows. The feature can help developers identify such threats and then be used "in conjunction with other security practices ... to help make applications more secure," Microsoft said.

Microsoft launched Visual C++ .Net last week (see story,

page 8). Cigital's warning followed and was unusual in that it came only a day after the consulting firm notified Microsoft of the alleged problem.

Microsoft spokesman Jim Desler said Cigital publicly aired the claim without giving Microsoft enough time to respond. "This is not how a security company should handle it," Desler said. "It seems to be a transparent publicity grab." In its statement, Microsoft accused Cigital of engaging in "blatant advertising through fear-mongering" in an attempt to sell its security services.

Desler said sour grapes may have also played a role. Cigital had previously been in the running for a contract to do security reviews for Microsoft but wasn't chosen, he said.

McGraw said the report of the alleged flaw is unrelated to the fact that Cigital didn't win the contract. "There's absolutely no truth in that," he said. "We do software security analyses for customers worldwide every

day. Sometimes we win work. Sometimes we don't."

Security analysts, however, appeared to be uncomfortable with Cigital's reporting procedures in this case. Eric Hemmendinger at Aberdeen Group Inc. in Boston said, "One day is not a reasonable amount of time" to give notice about a flaw before going public. "I question somebody's motives when they jump the gun."

"You always tell the other company before you make an announcement," said Charles Kolodgy, an analyst at IDC in Framingham, Mass. Normally, the advance notice given to vendors ranges from a few days to a few weeks, he said. ▶

SNMP

the CERT Coordination Center at Carnegie Mellon University in Pittsburgh.

"Lots of devices from every single vendor we deal with are affected," said Matt Kesner, chief technology officer at Fenwick & West LLP, a law firm in Palo Alto, Calif. "I can't imagine a broader problem."

Because of the widespread nature of the threat, analysts said firms that use SNMP need to take immediate action. "This is one of those 'pull the emergency cord, go fix it today' kinds of emergencies," said analyst Bill Gassman at Gartner Inc. in Stamford, Conn.

But some vendors, including Cisco Systems Inc., Hewlett-Packard Co. and Microsoft Corp., are still working on patches. "There are patches

out there for a lot of products, but not [for] all," said Marty Lindner, an incident-handling team leader at CERT.

SNMP services let network administrators remotely monitor and configure devices such as routers and switches. CERT said the vulnerabilities that have been identified result from differences in the methods vendors use to receive,

decode and process SNMP service requests. Many of the processes are flawed and can produce denial-of-service conditions and buffer overflows that could be used by attackers.

Concerns have been raised in the past about the security of SNMP, and many IT managers don't enable the technology in their systems as a result. But for those that do, Kesner said, identifying affected products and applying the required fixes could be a challenge, especially on large networks.

"It is an extremely major problem," said Josh Turiel, network services manager at Holyoke Mutual Insurance Co. in Salem, Mass. "The more intricate your network is, the more exposed you are."

According to Lindner, just figuring out whether installed systems are compromised will take work. "It depends on how you have a particular product deployed," he said. "It may or

may not be vulnerable. The combinations are complex."

If patches aren't available from vendors yet, it may be best to disable SNMP services, CERT said. But in some cases, companies will need to filter externally initiated network traffic to fully protect themselves, even if their SNMP services are disabled. CERT also recommended other steps IT managers can take to mitigate the risk of attacks (see chart). Such measures can degrade network services but should still be taken, Gassman said.

Turiel said Holyoke Mutual plans to apply patches to all the SNMP-based products on its network, even those that don't have the protocol enabled.

Merit Networks Inc., an Internet service provider in Ann Arbor, Mich., has disabled many of its SNMP services, said Jeff Ogden, director of high-performance networks at Merit. But it's installing patches and re-examining its network filters anyway, he said. ▶

Warning Delayed to Give Vendors Time

The SNMP vulnerabilities were discovered by a security research group at a university in Oulu, Finland, last year. But CERT and the Finnish research group held off on publicizing the problems to give vendors time to develop patches.

While some vendors still don't have fixes for their products, Marty Lindner, CERT's incident-handling

team leader, said the organization decided to issue its advisory because information about the vulnerabilities was beginning to surface.

"It's time to go public and let everyone know that these vulnerabilities exist," Lindner said. "I doubt that there is even one large organization out there that is not affected by these vulnerabilities."

The Oulu University Secure Programming Group reported the vulnerabilities in SNMP Version 1 to CERT, which then contacted vendors that might be affected. The Oulu group previously discovered flaws in several implementations of the Lightweight Directory Access Protocol. In both cases, the researchers used custom-developed test suites to check a selection of products.

– Jaikumar Vijayan

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NEWS

Xerox Calls on CRM to Help Bolster Turnaround Attempt

ROI expected within a year of installing software

BY MARC L. SONGINI

Xerox Corp. is investing in two new customer relationship management (CRM) applications as part of its effort to boost sales after two years of big losses.

The Stamford, Conn.-based maker of copiers and other business equipment plans to install call center and channel management software that it hopes will help cut costs and increase sales. Xerox said it expects the CRM technology to deliver a return on investment six to 12 months after the rollout is finished early next year.

The CRM project is a key piece of Xerox's initiative to regain market share following losses of $293 million last year and $384 million during 2000, said Mary Donato, vice president of the company's Tele-Web sales unit. That operation has been planning for the rollout since May to "make sure we don't make the same mistakes other companies have," she said.

For example, Xerox included a three-week system simulation and business modeling process for the call center applications, she said. End users did trial runs with the software so they could see how it works and suggest ways that it could be customized for Xerox.

The call center and channel management applications are from San Mateo, Calif.-based Siebel Systems Inc.

The Siebel call center software should let TeleWeb's 800 online and telephone sales workers in North America access customer data from back-end systems more rapidly than they can now, Donato said. The rollout is scheduled to start in April with a pilot installation at a call center in Saint John, New Brunswick, that has about 150 users. If all goes well, Xerox will expand the applications to 13 other call centers this year and wrap up some secondary project work next year.

A Xerox spokesman said the company plans to install Siebel's eChannel software later this year. Xerox will use the channel management application to collaborate with its network of more than 3,000 dealers and resellers and to give them access to lists of frequently asked questions, customer service templates and other tools.

Integration Challenges

Donato declined to disclose the budget for the CRM project but said it will cost millions of dollars. The call center software will replace homegrown Windows-based systems, but TeleWeb will continue to rely on some existing applications, such as a customer data warehouse built around an Oracle Corp. database.

Creating the integration hooks needed to tie the Siebel software to back-end systems and the data warehouse will likely be the toughest part of the project, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif. Such integration efforts are expensive, time-consuming and easy to botch, Greenbaum said.

Xerox's direct sales force isn't included in the CRM project. The Xerox spokesman said the company hasn't announced any new CRM plans for that unit, which now uses a series of proprietary applications. ▶

NEWSINDUSTRY

BRIEFS

Kodak Sues Sun Over Java Technology

Rochester, N.Y.-based Eastman Kodak Co. filed a lawsuit claiming that Sun Microsystems Inc.'s Java technology infringes on three patents it holds. Kodak said the companies have been discussing the issue without coming to a resolution for more than two years. Sun said that the infringement suit, filed at the U.S. District Court in Rochester, is without merit.

Network Associates Signs Gauntlet Deal

Network Associates Inc. agreed to sell its Gauntlet firewall and virtual private network gateway software business to San Jose-based Secure Computing Corp., which offers a line of rival products. The companies didn't disclose the terms of the deal, which they expect to complete this week. Santa Clara, Calif.-based Network Associates put the Gauntlet unit up for sale last fall.

Canadian Firm Buys Exodus Data Center

Q9 Networks Inc., a Toronto-based Web hosting firm, said it's buying a 160,000-square-foot Internet data center in Brampton, Ontario, from Exodus Communications Inc. for an undisclosed price. Santa Clara, Calif.-based Exodus, which filed for bankruptcy protection in September, sold most of its business assets to London-based Cable & Wireless PLC earlier this month.

Short Takes

Sunnyvale, Calif.-based NETWORK APPLIANCE INC. returned to profitability in its third quarter ended Jan. 25, but the storage vendor's $7 million net income was down 79% year over year. . . . GEO-PHOENIX, a user interface start-up in Cambridge, Mass., named former PALM INC. CEO Carl Yankowski as its executive chairman.

Nortel Struggles to Rebound, Build Sales

Vendor delays optical switch, warns that hitting Q1 goals will be difficult

BY MICHAEL MEEHAN

NORTEL Networks Corp.'s attempt to recover from the huge losses and revenue declines that have been plaguing it didn't get any easier last week.

The Brampton, Ontario-based telecommunications and networking equipment vendor announced bad news on three fronts. For starters, Nortel revealed that it does not yet have a delivery date for a new high-end optical switch with support for multiterabit data rates.

The company also warned that it could have trouble hitting its first-quarter revenue target. Nortel CEO Frank Dunn said in a statement that sales are softening because of "even more resolve by customers than originally anticipated to minimize spending in the near term." As a result, he said, meeting the first-quarter plan will be "more challenging."

In yet another disclosure, Nortel said Terry Hungle gave up his job as the company's chief financial officer after the firm learned that he had made personal investment moves involving its stock prior to two announcements last year. Dunn, who was CFO before becoming CEO on Nov. 1, will manage the company's finances on an acting basis.

Analysts expected to see Nortel's OpTera Connect HDX switch by the end of 2001, but the firm now expects to start shipping it in the first half of this year. While it's bad form for a vendor to fall behind schedule on deliveries, analysts said, the delay of the new switch underscores the uncertain business outlook Nortel and its networking rivals are facing.

"Times have changed," said Zeus Kerravala, an analyst at The Yankee Group in Boston. "People don't buy technology because new technology's out. You need to give them a solution that either makes them money or saves them money."

What's at Stake

Steve Leaden, president of consulting firm Leaden Associates Inc. in Washingtonville, N.Y., said the last thing any networking vendor needs in this market is to get a reputation for selling buggy products.

"I'd rather see them make sure they've got it right than see them rush to make an announcement [just] because they think the market expects an announcement," he said.

During the current quarter, Nortel's sales are expected to be about 10% below the $3.5 billion revenue level the company reported for the last three months of 2001.

But Nortel, which lost $27.3 billion last year, said it still expects to see a gradual rebound in sales starting in the second quarter. The company also repeated an earlier prediction that it will return to profitability in the fourth quarter.

During a meeting with financial analysts in New York last week, Dunn said Nortel will maintain "a laserlike focus" on a pared-down portfolio of high-margin products aimed at the 50 largest telecommunications carriers worldwide. ▶

George A. Chidi Jr. of the IDG News Service contributed to this report.

Network Problems

Nortel has been hit hard by a sharp drop in demand for networking equipment:

The company lost $27.3 billion last year as revenue plummeted from $27.9 billion in 2000 to $17.5 billion.

Nortel has slashed its workforce from 92,000 employees early last year to 48,000 people as of last month.

John Roth stepped down as president and CEO in November and was replaced by CFO Frank Dunn.

Google Targets Intranet Data Searches With New Devices

Linux-based server appliances bundled with search engine

BY TODD R. WEISS

Internet search engine vendor Google Inc. last week joined the market for technology that lets companies provide built-in search capabilities on their corporate intranets.

Mountain View, Calif.-based Google released a pair of Linux-based server appliances that run its search software behind corporate firewalls. The new devices expand an existing offering through which Google provides customized internal search capabilities to corporate users on an application service provider basis.

Other vendors that market intranet search software include Fast Search & Transfer ASA, AltaVista Co., Inktomi Corp. and Yahoo Inc.

Avi Rappoport, an analyst at Search Tools Consulting in Berkeley, Calif., said Google is taking a different approach than those companies by bundling its software with server hardware. Customers who want to install the Google Search Appliance can "just buy it and plug it in" to their internal networks, Rappoport said.

The bundled strategy is also good for Google because it should help the vendor limit compatibility problems and other technical issues that can crop up when users install software on their own servers, said Laura Ramos, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Still to be seen, however, is how Google will handle shipping and supporting hardware products for the first time after previously being solely a software vendor, Ramos said.

Two models of the search appliance are available: a small device for departments and midsize companies, and an expanded one for larger companies (see chart). Pricing starts at $20,000 and $250,000, respectively, and includes two years of support and updates, according to Google.

National Semiconductor Corp., a chip maker in Santa Clara, Calif., was the first company to buy the new devices, said Google product manager John Piscitello. The appliances can also be used to provide search capabilities on external Web sites, he said. ▶

AT A GLANCE

Search Inside

Google's appliance for searching corporate intranets includes the following features:

HARDWARE: An Intel-based server running Linux

SEARCHABLE DATA: HTML Web pages, Microsoft Office, Portable Document Format and PostScript documents, and Lotus Domino files

SUPPORTED DATA INDEX: 150,000 documents on an entry-level version, and millions on a larger model

STARTING PRICE: $20,000 for an entry-level system

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JUST MEANT HAVING A BOX.

AND AT ONE TIME, THIS

PATRICIA KEEFE

Buck the IT Blame Game

THERE'S A SUBTLE and damaging trend afoot, one that threatens the reputation of many a hardworking IT department: Companies are starting to blame business decisions on IT's shortcomings.

It wasn't that long ago that businesses turned to IT as the solution to their problems, touting it as a competitive weapon. As long as it served to enhance the bottom line, it was "IT to the rescue." It seemed as if no problem was insurmountable given the right application of technical know-how.

But that was during the go-go days of growth and experimentation, when companies couldn't make — or spend — money fast enough. And throughout it all, IT was positioned as a strategic tool. Then we found out that the New Economy was subject to the same rules as the Old Economy. And the recession hit, colliding with an emerging climate of intensified government regulation and policy-making in the areas of security and privacy. And businesses started retrenching and running for cover behind IT's alleged failings.

Now we're seeing a change in tactics. Executives who are now being told to follow rules, implement safeguards or provide services that they would rather avoid — and that in the short term won't add to the bottom line — are suddenly citing IT as the reason they can't comply. This is a bad strategy for companies, and for the country as a whole.

Yet they *are* doing this, even though we all know better, and despite the fact that in most cases they will have no choice but to conform. Whether CEOs realize it or not, the last thing they need right now is a complicit or complacent IT department.

IT executives shouldn't let their systems be used as an excuse for bad

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business decisions, because an educated public can easily disprove that contention, hurting a company's credibility and business in the process. No one is going to believe, for example, that the same company that had no problem building an efficient data mining operation to collect, categorize and update customer names and preferences won't be up to the challenge of handling opt-in regulations ["Vermont Opt-in Rules Spur Suit," Feb. 11]. Nor is it believable that companies can't update their records to reflect customer access choices ["FTC Proposes Do-Not-Call List," Jan. 28].

Nor should IT sit idly by while company executives claim that they have neither the money nor the systems to implement new privacy and security regulations. Look around. In some cases, the systems you need are already in use in Europe. You need to be working on a Plan B while the business side sputters, threatens and stalls.

These new laws are now a fact of life for IT operations in the U.S. Affected companies need to comply with the laws, and not to the bare minimum. Those that don't will pay a price ["Firms Held to Privacy Pledges," Feb. 4].

Wise IT leaders will understand that these issues aren't going to go away, even during a so-called anti-government Republican administration. It's a necessary burden of the 21st century. So it's critical to stop making excuses and design privacy and security into operations from the ground up. More to the heart of most business decision-makers, lost time is lost money and lost opportunity. So once again, it'll have to be IT to the rescue. ❱

PIMM FOX

Standards Hole For Storage Management

DEMOLAND is populated with vendors that promote the virtues of open standards in a heterogeneous world but give product demos limited to their own equipment.

I suppose Sun Microsystems should be commended for selling software to manage storage devices from competitors such as EMC, IBM, Compaq and Hitachi as well as its own.

Alas, Sun didn't show this at its product unveiling, opting for a familiar all-Sun environment. And it's done little to solve the vexing problem of vendors using proprietary software and ignoring standards to manage multivendor devices.

Still, Sun's new line of storage systems at least recognizes that mass storage has become a black hole in which management spends more money on running the system than on the actual hardware.

Galen Schreck, an analyst at Forrester Research, says, "Companies can buy lots of storage, but the cost of managing it is a nightmare."

That's because vendors don't sell storage the way users buy it. Users select storage based on application type and data requirements, not the vendor. Vendors argue that customers want one storage provider, but they miss the essence of the demand: Customers want one management view of their storage options; they're not fixated on the name on the arrays. Customers want storage-on-demand as a service from a single console.

Schreck says, "The real measure of success is not whether you have a complete lineup of storage software or hardware. The long-term success is,

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NEWSOPINION

How does it play in a heterogeneous environment?"

Given that the worldwide storage management software market will grow from $6.6 billion last year to $16.7 billion in 2005, according to Gartner's Dataquest unit, it's fair to ask: How much of that will be spent on redundant software that users buy because they're locked into particular arrays?

Well, maybe not as much in the future as they do now, for two reasons.

First, in January, Hitachi, Inrange Technologies, IBM, StorageTek and Veritas completed interoperability testing on two jointly developed SAN products registered with the Storage Networking Industry Association.

Second, technology at the switch level, from start-up switch companies such as Pirus Networks for SANs and 7|10 Storage Software using a file system approach, should provide management regardless of device.

If storage vendors don't move from testing to implementation of storage management standards quickly (helping users simplify administration and reduce overhead), users will have the same jaundiced view of vendor interoperability claims that they have of vendors' "interoperability" demos. ▶

DAN GILLMOR

Unix on Rise? Mac's OS X May Mark Spot

UNIX RISING? Maybe, but the story isn't just Linux, and maybe it isn't just on the server.

Like many people, I was intrigued, if puzzled, this month when Sun Microsystems told the world how much it loved GNU/Linux. I'm still not precisely clear where the open-source operating system — better known as just plain Linux — fits into the Sun firmament, but it's safe to say that Linux got a serious boost.

Sun's move was only the latest such announcement from a big enterprise vendor. IBM's embrace of Linux has been well documented, and even Oracle recently said it's putting Linux front and center in its strategy.

All these moves had more to do with servers than clients, however. For all its strides above and below the desktop (the latter in embedded uses), Linux

hasn't made enough progress to get me off Windows, much as I want to shed the Microsoft monopoly.

Yet I'm typing this column on a PC running a variant of Unix. In fact, this version of Unix is becoming by far the most popular for desktop users, at least in the U.S.

The PC is a Macintosh.

Apple's Mac OS X is Berkeley Software Distribution Unix under the covers, with Apple's typically elegant user interface on top. There's a lot about the operating system that's unfinished, but on balance, I'm finding myself increasingly comfortable with it.

Not long ago, the notion that the Mac could become the ultimate Unix desktop computer would have been ludicrous. But Apple's done a remarkable job of bringing an industrial-strength operating system to the desktop with-

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out irreparably breaking older applications, which run in the "Classic" mode without modification.

Apple worked hard to get networking running well, particularly in corporate settings. But that's only part of the battle. If a company is wedded to Microsoft Exchange, OS X is basically a nonstarter. There's no OS X Outlook client, and the OS 9 Outlook client isn't up to snuff with the Windows version. At least Microsoft's Office suite for OS X works well, better in some ways than its Windows counterpart. Meanwhile, some vendors have yet to port their most popular applications — Adobe's Photoshop, in particular — to OS X, an odd lapse.

Maybe the truly interesting potential for the version of Unix called OS X is yet to be realized. Unix programmers

now have a platform that could be orders of magnitude larger than any they've ever seen. What new applications might emerge?

In the several months I've been using OS X, I've returned to the days when computing was fun for hobbyists. That's not an endorsement, needless to say, for a general-purpose platform, where the main requirement is that it should just work. But to the extent that software innovation might revive after a long dry stretch under the thumb of the Redmond monopolist, the industry could be in for a new phase of innovation, especially since this is one platform Microsoft doesn't control.

Oddly, the rise of the new Mac OS could end up being good for Linux. Applications that run well on OS X could be ported back to Linux, giving developers a larger target market than they have today.

Are we going back to the future with Unix? It's no longer a trick question. ▶

READERS' LETTERS

Analyzing Outsourcing

IT WAS INTERESTING that Paul A. Strassmann has confirmed his earlier findings "that major outsourcing moves can be a telling symptom of a company in trouble" ["Still a Loser's Game," Business, Feb. 4]. The decision to outsource is a business decision and as such should be subjected to the same sort of ROE analysis that any other large business decision would receive. One additional point to consider is that companies that outsource may be concentrating too much on cutting costs and not enough on increasing revenue. A company might pressure its managers to cut costs without allowing them the flexibility to also present ways to increase revenue.
Donald Lundry
Wayne, N.J.

Cheers for Vermont Regs

LET'S HEAR IT for Vermont! Opt-in is how the sharing of customer information should be handled ["Vermont Opt-in Rules Spur Suit," Page

One, Feb. 11]. Even where the opt-out standard is followed, any ethical business would adopt opt-in. The shame is that it takes legislation or regulations to get some companies to do what is morally correct in the first place. I wish Vermont all the luck, and I hope other states follow suit.
Charley Cross
eiStream
Folsom, Calif.
Charley.Cross@eiStream.com

THE WARNING that "Vermont residents may be excluded from the kind of promotional offers and information that data sharing allows" isn't exactly a threat. I'd love to get less spam and junk mail. I hope California enacts a similar law.
Eric Weidner
President and CEO
Workbox Inc.
San Francisco
eweidner@workbox.com

Let Your Voice Be Heard

IN REGARD to the recent letters to *Computerworld* about the H-1B visa and its effect on computer jobs,

there is something programmers can do: Write to your congressman, senators and the president. You can get your representative's name at *http://thomas.loc.gov/*, a site maintained by the Library of Congress. It takes all of 15 minutes to compose a letter. Companies may have big bucks, but you have the right to vote. If you don't write, then you have no one to blame but yourself.
John Parke
Marietta, Ga.

Garbage In, Garbage Out

NICK PETRELEY says Linux has "all the frills of Windows minus the crashes and cost" ["Baseball Cap Linux," Technology, Feb. 4]. I have run DOS, X Window, Mac OS, Unix and Linux. They will all crash if your disks are treated like a garbage dump. Most Windows users have no idea how to keep their files orderly and disks defragmented. I teach users to think of the disks as their house. How many people never take out the garbage or vacuum the rugs? They need to think about the com-

puter in the same way.
R.T. Kambic
Johns Hopkins Bloomberg
School of Public Health
Baltimore

He Should Start April 2

SCOTT CHARNEY starts April 1 as Microsoft's new chief security strategist ["Microsoft Taps Former DOJ Cybercop," News, Feb. 4]. Is this some kind of joke? I can see the headlines now: "Microsoft Finally Focusing on Security — April Fools!"
Bob Baer
Security architect
Wilmington, Del.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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CRM

Sober CRM

Irrational exuberance gives way to smaller, tactical projects with a quick ROI.

EDITOR'S NOTE

THE MIDDLE OF 2000 seems like a lifetime ago. For customer relationship management (CRM) systems, it was. Back then, the forecasts were bullish ("Market to Exceed $24 Billion by 2003" — hah!), and the money flowed for new enterprisewide projects. Software vendors, consultants and airline magazines latched on to the buzzword and saw vast potential.

Then came the creeping disillusionment in 2001 as projects failed, credibility slipped away and CFOs took an ax to CRM budgets.

It doesn't help that at least half of CRM projects fail to produce any benefits for the customer, according to Gartner Inc. researchers. Why such poor results? Bad data, bad politics, bad planning, bad processes and bad project management. Not good news when large companies typically spend $30 million to $90 million over a three-year period on a CRM project, including technology, labor, consultants and training.

Fortunately, companies are learning from their mistakes. Many businesses that failed with their first CRM project found that they could eventually get it right — on the second or third try (see story, page 30).

Today, analysts use much more cautious language regarding the CRM market — like "modest growth," "slow and steady" and "healthy pragmatism."

Pragmatism, indeed. Users are turning to tactical CRM projects rather than galactic ones. Now the goal is to use pared-down budgets to focus on smaller, high-payoff CRM projects driven by real business needs. Maybe a few success stories can sell this strategy to now-skeptical management.

"Many businesses blindly pursue costly CRM initiatives without understanding the challenges and costs involved," a Gartner analyst wrote in a September report. That certainly won't be the case if you read this Special Report and its online companion stories. ▶

Mitch Betts (mitch_betts@computerworld.com) is director of Computerworld's *Knowledge Centers.*

Knowledge Centers Online

Knowledge Centers are the place to go to find practical information about specific technologies and IT topics. In addition to a monthly Special Report in print, there are numerous resources at our Web site, including research links, glossaries, white papers and the following online features:

- Book excerpt: Sharp questions to ask CRM vendors
- How to sustain a CRM project during a recession
- Mazda's plans for a 360-degree view of customers

The Story So Far

The principle behind CRM — know your customer — dates back more than 100 years. By Frank Hayes

CUSTOMER RELATIONSHIP management (CRM) may be a new buzzword — it was coined in the early 1990s — but it's based on a pair of century-old ideas: that technology can make salespeople more efficient and effective and that the best way to sell your products is to know your customer.

By the late 19th century, the Industrial Revolution had made manufactured products plentiful and cheap. Businesses then began trying to apply the same systematic approach they had used to make production more efficient to the age-old practice of selling.

John Henry Patterson, who founded National Cash Register Co. in 1884, gets credit for inventing sales presentations, sales territories and sales quotas. And in 1911, Olympic swimmer and *Chicago Tribune* advertising staffer Henry Jamison "Jam" Handy began researching why customers bought the products they did and explaining it to salesmen. He used flip charts and industrial films to give trainees a major advantage over the "shoeshine and a smile" approach of earlier salesmen.

Getting Organized

In 1947, another advance in sales technology came when Morris Perkin, an attorney in Allentown, Pa., designed a system that combined an appointment book, a tickler reminder system, a detailed time record, a diary and record of all work done and activities, and a work planner and organizer. His creation, the Day-Timer, eventually became a key tool for salespeople to efficiently manage their time. In 1950, inventor Arnold Neustadter began selling his Rolodex circular card file — then the state of the art for keeping track of sales contacts.

Meanwhile, large businesses were laying the groundwork for the high-technology end of the process: corporate data processing. IBM and Remington Rand were selling punch-card sorters to bookkeeping departments for tracking customer transactions. In 1952, Remington Rand began delivering its model 409 — the first computer designed specifically for business applications — and IBM rolled out the model 701, its first vacuum-tube computer.

The proliferation of mainframe computers and service companies such as Ross Perot's Electronic Data Systems Corp., which in 1962 began renting computer time to companies that couldn't afford to buy mainframes, meant that by the late 1960s, almost all government and corporate data on customer transactions was in electronic form.

Although the number of transactions stored on computers increased spectacularly through the 1960s and 1970s, computer and programming time was too expensive for most companies to use for anything but the simplest sales support. By the early 1980s, there were a few expensive, specialized sales support systems available.

But in 1985, salesman Pat Sullivan created Act, the first commercial PC-based contact management software. It was specifically designed to let salespeople track prospects, customers and customer data on a desktop computer instead of manually. Act was the first major step forward for salespeople since the Day-Timer, and it convinced corporate information systems departments that technology could do a much better job of supporting salespeople.

However, few of the sales force automation projects launched by corporate IT shops in the late 1980s and early 1990s were successful. Some salespeople resisted the technology itself, but more objected to the idea that a computer program was telling them how to deal with customers.
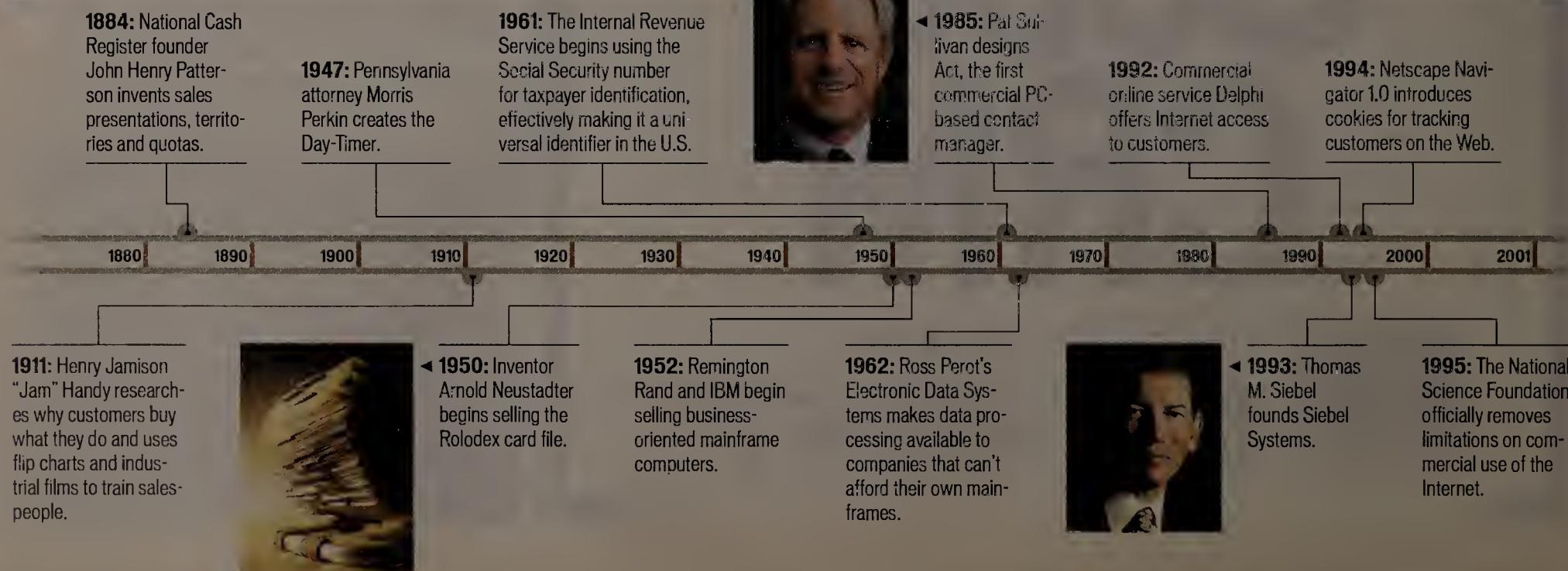
Big Changes

But two other changes in the technology environment made a shift inevitable. One was the opening of the Internet to commercial activity. The World Wide Web gave birth to online stores — and the ability to track customer behavior very closely with technology such as "cookies," which were introduced in Netscape Navigator in 1994. Suddenly, it was possible to use customer information to customize sales pitches on the fly.

The other change was the widespread use of PC-based client/server tools to access and juggle customer transaction data. Online analytical processing made data mining a reality — which, in turn, made even more customized marketing practical.

By the mid-1990s, CRM had become the new buzzword that combined sales force automation, sales-pitch customization and other systems of managing and using customer information. Siebel Systems Inc. in San Mateo, Calif., adopted CRM early as a way of distinguishing itself from other large packaged-system vendors. But today, SAP AG, Oracle Corp. and every other enterprise resource planning vendor offers CRM, too.

And now, on with the story ... ▶

1884: National Cash Register founder John Henry Patterson invents sales presentations, territories and quotas.

1911: Henry Jamison "Jam" Handy researches why customers buy what they do and uses flip charts and industrial films to train salespeople.

1947: Pennsylvania attorney Morris Perkin creates the Day-Timer.

1950: Inventor Arnold Neustadter begins selling the Rolodex card file.

1952: Remington Rand and IBM begin selling business-oriented mainframe computers.

1961: The Internal Revenue Service begins using the Social Security number for taxpayer identification, effectively making it a universal identifier in the U.S.

1962: Ross Perot's Electronic Data Systems makes data processing available to companies that can't afford their own mainframes.

1985: Pat Sullivan designs Act, the first commercial PC-based contact manager.

1992: Commercial online service Delphi offers Internet access to customers.

1993: Thomas M. Siebel founds Siebel Systems.

1994: Netscape Navigator 1.0 introduces cookies for tracking customers on the Web.

1995: The National Science Foundation officially removes limitations on commercial use of the Internet.

| 1880 | 1890 | 1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 | 2001 |

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i n v e n t

Many CRM projects fail the first time. Success doesn't come until the second or third attempt.
By Kim S. Nash and Marc L. Songini

YOU'VE BEEN WARNED: Putting in a decent customer relationship management (CRM) system is as perilous as installing enterprise resource planning systems used to be.

CRM projects fail more often than not, analysts say. The software is hard to install. It forces a lot of change, quickly, on business units. And even when companies manage to install and link applications that hold client information, they often don't serve customers any better, reports Gartner Inc. in Stamford, Conn. New York-based Mercer Management Consulting Inc. calls CRM a "money pit."

But some companies have gotten CRM to work well, albeit on the second or third try. It's in the repeated attempts that the real lessons are learned.

Some of the disappointment can be chalked up to classic bad habits in IT, such as not listening — sometimes not even talking — to end users about what they want in a new system. Or the CRM team may try to do too much at once, which almost guarantees delays and cost overruns.

But there are lessons particular to CRM that veterans share.

PeopleFirst Finance LLC, an online car loan company in San Diego, dived into CRM in June 2000, when it tried to install a complete suite from a well-known CRM vendor.

It was clear about three months into the installation that things weren't going well, says Sharon Spooler, vice president of business intelligence at PeopleFirst.

For example, there was no easy, automated way to manage bouncebacks from e-mail sales pitches that didn't

Try, Try A

reach intended recipients, she says. Also, the software couldn't properly track multiple versions of electronic pitch letters. The result: PeopleFirst couldn't get an accurate view of which campaigns worked.

"We tried problem-solving with the vendor. We tried a lot of different things to make it work. Every time you'd think you had a problem down, another one would pop up," Spooler says. "It was like a game of whack-a-mole."

Spooler declined to name the vendor, citing a deal struck when People-First killed the project in March 2001.

Now PeopleFirst outsources many problematic CRM tasks to Digital Impact Inc. in San Mateo, Calif. Digital Impact handles the administrative part of e-mail sales efforts, such as making sure messages look good in HTML and rich text, managing bouncebacks and tracking how many messages were undeliverable.

PeopleFirst, meanwhile, handles the content side of campaigns. It keeps databases on things such as which letters produce which results and which customers respond to which pitches.

Of PeopleFirst's initial attempt, Spooler says, "We dreamed a little too big."

Cessna Aircraft Co. had a couple of unsuccessful rollouts of CRM systems before successfully going live recently with Fairfield, N.J.-based StayinFront Inc.'s Visual Elk sales force automation product and Panorama decision-support tool.

Cessna learned some "bitter lessons" during its first two CRM attempts, in 1995 and 1996, says Dave Turner, manager of network systems at the airplane maker in Wichita, Kan.

First, Turner says he learned to choose vendors that will be around a long time. Cessna rolled out the first phase of its CRM system but had to delay the next stage until a revision of the vendor's application shipped. It never did, he says, declining to name the supplier. Cessna killed the project with that vendor.

Turner says he also learned how to write better software contracts. For example, the deal he negotiated with one of his original CRM vendors had no explicit provision for a refund if things soured. But when the software didn't work, Turner was eventually able to get a refund. "They did other business with us, so it was in their best interest to keep us happy," he says.

Still, he advises other users to include such clauses upfront.

Dennis DeGregor, vice president of CRM at Allstate Insurance Co. in Northbrook, Ill., has avoided the full-suite option. All-in-one packages are less expensive to maintain, acknowledges DeGregor, who has also done CRM projects at Merrill Lynch & Co. in New York and US West Inc. But suites can lack key pieces, which means buying a separate package to add on and integrate anyway.

In late 2000, Allstate requested proposals from the major suite vendors. "None of them came remotely close to having the functionality that matched our CRM vision," he says. Siebel Systems Inc. in San Mateo, Calif., for example, doesn't have a sales campaign management module, he says, and SAP AG doesn't offer predictive modeling.

Allstate, therefore, went the best-of-breed route. Its uses at least six packages from five vendors, including analytics and campaign tools from

DENNIS DeGREGOR says Allstate uses CRM tools from five vendors.

Xchange Inc. in Boston and lead-management software from MarketSoft Corp. in Lexington, Mass. Allstate's internal IT staff is responsible for integration.

Wanted: Ambassador

One key to CRM, say those who have gotten it right, is having a facilitator between IT and marketing, customer service or whatever business unit is supporting the project. This person typically doesn't come from IT but has a good grasp of technology. Ideally, he should report to the CEO or some other manager outside the groups he's trying to unite.

Spooler and DeGregor play that role. So does Stephen Nehring, marketing integration manager at Sprint Corp.

The telecommunications provider built a top-to-bottom CRM system in-house. The system has been running for a year and manages 5TB of data.

When a request comes from marketing to capture more data about customers, Nehring explains to IT why it makes sense to free up storage or servers. "[IT may] say, 'We don't have any space.' I say, 'If we have this type of information and if we could market to this type of individual, it would generate this amount of sales,' " he says.

Nehring also coaxes marketing to examine whether it really needs all the data it wants, citing how expensive it is to store and access that data quickly.

All sides go to all CRM meetings. "By having all those individuals in the same room, we all put in our two cents without months of e-mail back and forth" before a decision is made, he says. "We won't meet unless everyone can be there. There's too much at risk."

It may be the nature of CRM that it takes a few iterations before both business and IT are satisfied.

Every company does business differently, even within the same industry. It's impossible for a single vendor to design a CRM package that includes the business rules of all possible users, says Denis Pombriant, an analyst at Aberdeen Group Inc. in Boston.

What's helping second-time CRM shops, as well as companies only now getting into the technology, is a new modularity to CRM software, he says. Some vendors have separated the rules for how different parts of the CRM system interact from the code that makes the software work. That makes it easier for users to tweak CRM applications to better fit the quirks of how they do business.

Chordiant Software Inc. in Cupertino, Calif., and J.D. Edwards & Co. in Denver offer such a modular architecture based on Java, Pombriant says.

"Inevitably, there's a need to rationalize the way software runs and the way business runs," Pombriant says. "It's a Herculean effort to define an organization's business rules then encode them in software." ▶

Nash is a freelance writer in Yorktown Heights, N.Y. Contact her at kimnash2002@yahoo.com

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Making CRM Work

Mercer Management Consulting says CRM projects will disappoint if users focus too much on technology and not enough on business goals. To avoid that mistake, Mercer recommends that users take the following steps:

DEFINE growth goals for the company and the appropriate use of technology to achieve them. Never lead with the technology.

CAPTURE AND USE customer information that really matters. Resist the 360-degree customer view; it results in too much data of too little consequence.

DEVELOP measures to prioritize and track a CRM project's success based on its ability to build customer value and boost productivity.

BUILD a database of knowledge about customers by using "test and learn" methods to continuously refine product and service pitches.

SOURCE: MERCER MANAGEMENT CONSULTING INC., NEW YORK, JULY 2001

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gain

KEVIN FOGARTY

Slow and Steady Can Win CRM Race

INFORMATION TECHNOLOGY MANAGERS are caught in a bind. Their budgets are shrinking faster than a snowman in a rainstorm, but that doesn't mean that their colleagues will stop asking for IT to help improve the business.

IT became strategic during the '90s, putting CIOs in the boardroom. Now, CIOs are on the spot to demonstrate that IT is as valuable in the thin times as it was during the fat ones.

There are only two real ways to do that, according to Ronald Boeving, vice president of information systems at health care benefits company First Health Group Corp.

One is to find a way to get the company into new market niches; the other is to improve and extend the services you offer existing customers.

OPINION

This sounds like a situation tailor-made for a CRM system, such as the one you have probably partially rolled out. But as IT budgets shrink, big CRM projects are among the first to get frozen out.

A Meta Group Inc. survey says that companies with CRM projects are shrinking the scope and budgets of these projects by 35% on average.

Gartner Inc. has expressed concern that this trend might cause a backlash against the whole idea of "customer-centricity," but the actual danger is different.

If you freeze a migration halfway, you might still have to pay half a million dollars or so in maintenance costs on the old system and twice that much for the new one, plus the cost of products and developer time to integrate data from the two.

A better idea is to keep the migration moving, but slowly. Assuming you're moving from one vendor to another, call them both and ask to renegotiate your maintenance and purchase costs — they might benefit from offering a discount. The old vendor will benefit because it won't be losing you as a customer as fast; the new one will help cement a new relationship.

Cathie Kozik, CIO at Tellabs Inc., says that almost every vendor with which she has tried that tactic has agreed to renegotiate, even when the contract was just a few months old. It's in vendors' interest to help you manage your budget, even if they're having a hard time themselves.

If they resist, she says, it doesn't hurt to mention that when good times return, you'll remember which vendors were willing to provide solutions to your budget problems, as well as your technical ones.

If you're not caught mid-migration, or if you're between phases, you're in much better shape. If you can break a monstrous CRM project into smaller units, each of which has a clearly defined benefit, you can still make a real difference to your bottom line, using parts of a plan you've probably already built.

First, pick a target you're sure will deliver so much benefit to the business unit involved that *it* will lobby the CFO for the money to pay for the system, even if you sold the idea originally. To a CFO, IT proposals are always expenses; business proposals are investments.

Try narrow areas that will show improvements quickly:

■ Make your automated voice-response systems so effective that customers don't hate them (as much).

■ Make more customer data available to call center operators so they can solve customer problems on the first call.

■ Add self-service features to your Web site.

■ Add ordering and sales capabilities to your Web site, even if you pass those orders to retailers or other partners.

■ Improve the integration between your billing system and the customer's ordering system to make selling smoother. Do the same thing between your ordering systems and your suppliers, then ask for discounts in exchange for making the relationship seamless.

The key to the CRM concept, after all, is knowing what customers need and getting it to them. If you can make your business more responsive to customers with small changes, rather than with massive CRM rollouts, so much the better. ▶

KEVIN FOGARTY is a contributing columnist in Sudbury, Mass. Contact him at kevin.fogarty@yahoo.com.

Why Do CRM?

The top three strategic rationales for implementing customer relationship management programs:

Increase customer retention/loyalty	94%
Respond to competitive pressures	77%
Competitive advantage from superior customer service	73%

Base: Survey of 96 global companies; multiple responses allowed

SOURCE: THE CONFERENCE BOARD INC., NEW YORK, AUGUST 2001

Biggest Challenges

Here are the top challenges to implementing a successful enterprisewide CRM strategy:

1. Dedicating resources
2. Cost
3. Resistance to policy changes
4. Awareness of top executives
5. Vendor selection
6. Conflicting organizational priorities
7. Elusive ROI

Base: Survey of 102 companies

SOURCE: IDC, FRAMINGHAM, MASS., NOVEMBER 2001

Touch Points

Companies were asked: "Through which channels do you touch customers today?"

Phone	93%
Field	
Web	63%
E-mail	
Fax	43%

Base: Survey of 60 global companies; multiple responses allowed

SOURCE: FORRESTER RESEARCH INC., CAMBRIDGE, MASS., OCTOBER 2001

IN TIMES LIKE THESE, YOU NEED E-BUSINESS SOLUTIONS THAT WILL HELP YOU SURVIVE TIMES LIKE THESE.

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THE BEST-RUN E-BUSINESSES RUN SAP

SAP

IT can help you find the hidden pearls in your customer database, but there are risks. By Gary H. Anthes

CONSUMER SATISFACTION surveys form the cornerstone of customer segmentation efforts at Cypress, says sales chief Bill Verdi.

THE CUSTOMER wasn't happy. He had tried several times to get in touch with someone at the local office of Cypress Semiconductor Corp., but no one had returned his phone calls. So he filled out a customer satisfaction questionnaire at Cypress' Web site, and his poor rating of the company automatically triggered an e-mail to Bill Verdi, Cypress' vice president of headquarters sales. Within 24 hours, Verdi was on the phone with the customer and the local sales office.

"The customer was totally amazed, and pleased," Verdi says. "We booked business with him within three days."

San Jose-based Cypress has made satisfaction surveys the cornerstone of its customer segmentation efforts and its entire customer relationship management (CRM) program. In the chip maker's eyes, nothing so distinguishes one customer from another as each customer's feelings toward the company. Cypress' real-time customer satisfaction monitoring system from Satmetrix Systems Inc. in Mountain View, Calif., triggers the e-mails to Verdi and will soon produce the data that determines the bonuses awarded to employees, based on responsiveness to customers.

Companies often segment their customers for different treatment. Frequent fliers get the best seats (but not necessarily the best prices). Buyers of gardening books get pitches for more gardening books. Big-bucks investors never get put on hold.

Data warehouses, data marts, data mining tools, statistical and analytical software, and CRM systems are enabling ever more sophisticated customer segmentation. But pitfalls abound, including alienating customers by making inappropriate pitches and ignoring customers with low current returns but high potential.

Cypress has the right idea about surveys, says Fred Reichheld, director emeritus at management consultancy Bain & Co. in Boston. He says companies often spend millions of dollars on surveys but then don't use the results at an individual customer level. "So I

Picking Winner

could have said in a survey that I am unbelievably dissatisfied, and the next time I talk to a service rep, they have no idea I ever said that," he says.

Another mistake companies make is segmenting current or prospective customers on the basis of demographics such as age, income, sex or education because that information is relatively easy to get. "But the best companies will segment based on fundamental values," Reichheld says.

For example, he says, The New York Times Co. tried without much success to attract new readers based on demographics. Then the publisher discovered that readers of *The New York Times* shared certain values, such as an interest in lifelong learning. Those kinds of values can be gleaned from surveys and from mailing lists obtained from sources such as The History Channel, Reichheld notes. He now rates the *Times* "outstanding" in its subscriber campaigns.

FleetBoston Financial Corp. has increased the number of people in its database marketing area from three to more than 30 in five years. The company says the targeted marketing that its customer segmentation allows has boosted the returns from its sales campaigns tenfold.

Using time-and-motion studies and activity-based costing, Fleet has computed the cost of every kind of transaction and customer interaction. Fleet can use that information to compute and track the profitability of every customer, and it can target its marketing efforts to individual customers and households based on their current and past contributions to the bottom line.

To help predict future contributions, Fleet buys data from external sources such as credit bureaus. "We figure out what's the customer's total wallet, then we can see what's our share of the wallet," says Brian Wolf, senior vice president for corporate marketing. The possibility of getting even a small share of a big wallet makes such customers a juicy marketing target.

Fleet also uses a neural network system to watch transactions in real time.

Is There a Statistician In the House?

G. Jack Theurer is a consultant and statistician who uses a practice called step-wise logistic regression to find out what pieces of data will be good predictors of customer behavior. Recently, he used the method to help AT&T Corp. determine who among its customers are likely business travelers – based on call records, demographic data and other information he won't reveal.

Theurer's "science" comes from data mining and statistical tools from SAS Institute Inc. in Cary, N.C., but the "art" lies in his head, he says. "If you give 10 statisticians the same database, each one will do it differently," he says.

He says the most common mistakes companies make in statistical modeling for customer analysis are the following:
■ Developing models as "black boxes" and then blindly applying them over time without adapting them to changing circumstances.
■ Using incorrect or inconsistent data – garbage in, garbage out.

■ Including data that isn't understood. "Use your intuition as to what data to include," Theurer advises.

Big companies are unlikely to get the job done with one or two part-time analysts. Fingerhut Cos. in Minneapolis uses SAS software and hundreds of models to decide who out of its database of 6 million active customers will get each of 80 catalog mailings each year. The models consider some 1,400 variables.

Randy Drdahl, Fingerhut's director of business intelligence, has a staff of 20 statisticians who constantly tweak the models and adapt them to changing market conditions. When asked what advice he'd give to IT managers without those resources, or without the imagination to think of 1,400 variables, Drdahl says to start by doing segmentation based just on the frequency and size of recent buys.

"If you have a customer database, at least do that," he says.
– Gary H. Anthes

It can spot patterns, such as decreasing transaction rates or balances for a high-value customer, that indicate that a customer may soon leave. "We call them," Wolf says. "We found we could cut our attrition rate in half. In most cases, we had products they didn't know we offered."

'If You're Rich, Press 3'

At many financial institutions, including Fleet, caller identification and routing systems linked to a database of customer histories and characteristics are used to ensure that the most valuable customers get preferential treatment. Investors with million-dollar portfolios get to bypass those endless automated voice prompts and are routed to the most experienced service representatives.

The rigor of Fleet's customer analysis isn't for everyone, says David Harding, a principal at consultancy McKinsey & Co. in Minneapolis. "Some companies spend years and years and millions of dollars building these databases, but when it comes to making a calculation around customer value, they can't pull it off," he says.

Often, the problem lies in trying to determine the cost of serving each customer, which is difficult and unnecessary, Harding says. It's usually sufficient to just apply average costs to customers by group.

Some companies fail to send the information mined by analysts to the marketing, sales and front-line customer service people who could actually use it. He recommends having integrated teams of IT, statistical analysis and marketing people.

Customer segmentation sometimes drives dynamic pricing, a model in which prices for airline seats, hotel rooms, rental cars and other items change as supply and demand change, and vary depending on who is buying. Such revenue management practices can add millions to profits, but there are risks.

In September 2000, Seattle-based Amazon.com Inc. found itself in hot water when some customers found that they were being quoted higher prices than other customers for DVDs. Amazon quickly abandoned the practice, calling it a pricing "experiment."

Amazon botched the implementation of a perfectly valid concept — that of offering better deals to those customers deemed to have greater long-term value, says Deepak Sirdeshmukh, a marketing professor at Case Western Reserve University in Cleveland.

"What companies do in a smarter way is stealth differentiation, in which the actual price customers see is the same for all segments, but then in the background you mail or e-mail discount coupons of different value to different customers," he says.

Sirdeshmukh says IT-based initiatives often backfire because it's so easy to spit out promotional e-mails or make dinnertime telemarketing calls to some favored customer segment. "One of the biggest pitfalls of customer databases is that the best customers are bothered endlessly — surveys, new offers, cross-selling — sometimes by multiple people within the company," he says. "People are getting CRMed."

The solution, Sirdeshmukh says: "You need smart thinking on top of the database."

The online division of Zeeland, Mich.-based furniture retailer Herman Miller Inc. is determined to avoid that kind of mistake. The 16-month-old division, called Herman Miller RED, is collecting data on the company's customers and will one day, for example, notify frequent buyers of chairs when the company gets a new model in stock.

But the process isn't ready yet. "Our technology is ahead of our business, and there's a great danger in doing something because you can," says Matt Johnson, the company's Web site manager. "The personalization won't pay off until we have a critical mass of user experiences and order histories." ▶

CRM provides a bookseller with the data it needs to stock shelves with quick-selling, high-margin products. By Pimm Fox

CUSTOMER RELATIONSHIP MANAGEMENT (CRM) software is usually billed as a tool to help companies better understand their customers. But in the case of WH Smith PLC, CRM helped the international bookseller better understand itself and how it turns a profit.

WH Smith wanted to get a grasp on customers' buying patterns, anticipate trends and more carefully align inventory to maximize profits in its 1,200 U.K.-based stores. So Trevor Dukes, the company's head of information strategy, last fall worked with a team that included store managers and central office executives to install a Web intelligence CRM system from McLean, Va.-based MicroStrategy Inc.

The goal was to cut the amount of paper shuttling back and forth between stores and the corporate headquarters in Swindon, England, and give store managers greater insight into what is happening in their own stores and throughout the WH Smith network.

ROI

Before, "we had only been able to monitor sales and stock at the central office, and senior store managers were sending us tons of paperwork about their stores," Dukes recalls. The communications process was grinding to a halt, and information was out of date once it was organized and put into reports. In addition, while directives from headquarters about promotions or incentives did make their way to each retail outlet, there was nary any integration or insight about the most profitable items among the more than 60,000 CDs, books, games, stationery and gifts the stores offer.

At WH Smith, with sales last year of $3.9 billion and profits of $188 million, this meant a rethinking of responsibilities and roles for store managers vis-à-vis the central office executives.

Insights Turn Into Profits

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"What shores up success for managers in the field is if they are clearly profit-focused and have tools to get visibility and confidence about making merchandise and stock decisions," notes Ian Rowley, a 22-year veteran and area manager for 20 stores.

But the issue, according to Dukes, was how to share information about what was profitable in one store with managers in other stores. Before the new system was implemented, there was no way to share this information.

The new Web-based CRM system begins generating reports in template form from the time a customer makes a purchase in a store. Sales and inventory data is sent from each retail location to a central data warehouse that store managers can access via an intranet. The Web version will be rolled out this year. The software tools available to managers include report templates and wizards so managers can get customized views of inventory based on criteria such as highest-margin items ranked by sales.

A Clearer Picture

Barrie Stewart, manager of the WH Smith store in Dunbartonshire, Scotland, says he can now see which specific products in the store are selling well, badly or according to expected trends, allowing him to take appropriate action. "It allows me to ask several questions, such as, Is the performance down due to poor display standards, poor stock availability or incorrect location?" Stewart says. Other questions he can ask include, Is the product right for this store? Does it provide enough profit from space allocated, or could another product's space be enlarged or a new product brought in to provide better profit for the space?

This kind of granular information is one of the highlights of using any CRM system to gain greater return on investment. But the information available from a CRM system still needs to be acted upon, and the best, most timely information is of little use unless the corporate strategy aligns with what the customer data is revealing, says Bob Moran, an analyst at Aberdeen Group Inc. in Boston.

For example, store managers with comparable demographics and sales volumes can see shifts in customer buying from store to store as well as from week to week, but they need the go-ahead to act on the data.

Stewart says he gives key information to store employees about which specific products sell the most and which are the most profitable. This ensures that the staff will display best-selling products in key areas with high display standards and well-maintained stock levels. "They are aware of higher profit margin products which can be sold as add-ons or displayed adjacent to best-sellers or in fast-flow areas," Stewart explains. Store personnel can also feed back information or ideas to managers, such as out-of-trend sellers or local opportunities that can generate more sales and profit.

Before the CRM system was implemented, store managers had no way of identifying the most profitable products, so they couldn't allocate their time to profitable lines. Now, if a store manager sees that a book is selling well, he can move it to the front window and push the CDs that aren't selling so well to a lower display area.

Get the Most Out of CRM

Here are some tips on how to exploit retail customer data:

①

Match shelf displays and sales with products connected to specific holidays or activities.
"If in July you see a blip in sales of books about barbecues, you stock accordingly," says William R. Armstrong, a retail analyst at CL King & Associates Inc. in Albany, N.Y.

②

Train users how to interpret CRM data to make adjustments in the inventory mix and other variables to make stores more profitable.
"You can design the most wonderful system, but if you don't have users or data, it won't accomplish anything," says David Bradshaw, a CRM analyst at Ovum Inc. in Boston.

③

To thine own self be true – know your own business needs.
All of the vendor hype aside, CRM technologies do have real value, and there is a need for them, says Bob Moran, an analyst at Aberdeen. But choosing the right CRM requires understanding your own business operations, Moran adds.

④

Be realistic.
CRM data isn't a panacea for poor business practices. "It won't fix a bad business, but strong success in CRM means going slow and starting small," Bradshaw says.

"It is all about maximizing your store's layout," says Rowley, adding that because he's armed with data from the CRM system, he can see how sales are being produced and whether those sales are actually generating profits.

"Our stores tended to be very sales-driven, as many retail environments are, but the store personnel didn't know what products were driving the profits," he says. Now, Rowley says, the stores' staffers know that displaying high-margin products such as branded stationery or books will produce a better yield on the store's overall inventory.

"We can track specific items, and if we see that a high-margin book is selling particularly well in, say, a tourist location, we can add a display at a shop that has high tourist traffic to try and take advantage of that information," he notes.

The CRM system is also able to match actual buying information about customers at the point of sale, giving greater depth to information in the customer data warehouse. "The marketing people can really see trends from individual customers," Rowley says.

Eventually, WH Smith will be able to tie individual e-mail promotions to in-store activity. "If we see that you bought books in one particular subject, such as Asian cooking, it isn't a far cry to imagine that we can let you know that a new Asian cooking book or an in-store promotion is about to launch," notes Dukes.

For now, though, Dukes says he's happy that individual stores can compare performance based on customer demographics and regional preferences as well as different displays.

Dealing With Demand Swings

WH Smith also is using information from the CRM system to make the company's inventory distribution more flexible so it can accommodate real-time demand changes.

"When we see one store selling out of a particular item, we can shift inventory from a store where it isn't selling as well and take advantage of customer demand," says Dukes. To derive maximum benefit from CRM, corporate support is necessary from other business processes such as stocking and distribution, he adds.

Training in-store personnel how to access the central data warehouse and generate relevant reports on inventory items took place prior to the crush of the 2001 holiday shopping season.

"Using the CRM system is a skill in itself," says Stewart. "The more PC-literate manager will find the tool easy to use, whereas the pre-PC generation may view it as a task to learn that takes up valuable time which could possibly be better spent elsewhere."

The CRM system was put together in a short amount of time, with a prototype in August 2001 and a pilot in September, followed by the October rollout. Dukes would have preferred more time to "get the consistent education across to a larger number of stores," but even he was distracted during December. During the height of the holiday season, Dukes was in the stores unpacking boxes and stocking shelves.

"It gives me greater credibility to be working with the people who use the CRM system and a better understanding of what they need," he says. ▶

Schwab Sees CRM Payoff

WHO IS HE?

Robert Seidman is senior vice president of the integrated client experience group at CRM pioneer The Charles Schwab Corp.

Q&A *While other companies have tried and failed to wring competitive advantage from their customer relationship management (CRM) systems, The Charles Schwab Corp. keeps squeezing out value. The San Francisco-based financial services firm was an early adopter of CRM in the 1990s. Despite a 25% decrease in operating revenue and a 52% drop in operating income last year, Schwab is continuing to invest in tools that give customers a more integrated, personalized experience, whether they visit a Schwab branch, make a phone call or visit Schwab.com. Robert Seidman, senior vice president of the integrated client experience group at Schwab, spoke with freelance writer* **Robert L. Scheier** *about the past, present and future of CRM at the company.*

What does "integrated client experience" mean? Through the '90s and the first part of 2000, we . . . had a lot of things happening in the branches, a lot of things happening in the call center and a lot of things happening on the Web. Now we're very much focused on bringing all those experiences together so that . . . wherever you deal with Schwab, you're dealing with the same Schwab.

Is this integration tied to specific financial goals? We're developing the capability to provide different customers . . . information tailored to them based on what their needs are. We know that [improved] experience will [lead to] things like incremental revenue.

In terms of cost-cutting, we developed on Schwab.com a natural-language search tool [from iPhrase Technologies Inc. in Cambridge, Mass.,] that also has a lot of stock-screening capabilities. Based on usage of the search tool, which reduced calls and e-mail volumes, we're saving about $125,000 per month. The payback period was probably less than a year.

Investors are spooked by the down market and the Enron collapse. How has that changed your CRM and Web strategies? It only makes our need to do CRM more important. We still have just as many people visiting the Web site; they're just not trading. They're coming there for advice [about] what kind of planning

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AT A GLANCE

The Charles Schwab Corp.

BUSINESS: World's largest discount stock brokerage and the No. 1 online trader in the U.S. Traders can access Schwab's services via telephone, wireless device and the Internet. The firm is No. 260 in the Fortune 500 and No. 16 on *Fortune*'s list of most-admired companies.

ACTIVE CLIENT ACCOUNTS: 7.8 million

ASSETS: $846 billion

SALES (2001): $4.3 billion

NET INCOME (2001): $199 million

EMPLOYEES: 19,600

SOURCES: SCHWAB.COM, HOOVERS.COM

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they should do. Even though the trading frenzy sort of abated, the need to provide a great client experience is [stronger] than ever. We are piloting a variety of fee-based services [in addition to the existing nonbrokerage business].

You're using Yodlee Inc., an application service provider in Redwood City, Calif., for account aggregation services. How will that work? A customer enters a variety of account information, and [Yodlee] goes and scrapes the Web sites they subscribe to, pulls in all the data and aggregates it on the page. [In April, Schwab plans to offer the aggregation services to the 6,000 independent advisers who sell its financial services.] I don't think we have any immediate plans to [offer] something like this with Schwab.com. We would never, ever, set something up where we gave someone access to our customers' data.

Understanding customers is an important part of your CRM strategy. How will you do that? By having a good database, being able to collect information from [various applications], filter it and query against that data.

Given today's economy, how are you funding that integration infrastructure? Even in a down market, we're still investing heavily in both technology and integration. It wasn't a fun year, but we're not bankrupt. We still invest in things that are critical to the business.

How personalized is the customer's Web experience? Right now, the site is somewhat personalized and highly customizable. You can select what information you want on certain pages or [change] where it shows up on the page.

What lessons would you offer other companies? We very early on identified CRM as a big initiative for us; we identified clear owners on the business and the technology sides. The ownership part and accountability is important, because you could get yourself fouled up where . . . we could have had a CRM czar for each channel and then have to try to aggregate that. Not [having a separate CRM chief for each channel] was a good thing. ▶

Scheier is a freelance writer in Boylston, Mass.

Field Report:
CRM Analytics

Having an integration road map is the best way to navigate through the deployment terrain of CRM analytics. With failure rates of almost 50% for implementations of CRM applications and CRM analytic projects, it seems likely that the integration map is the one that many companies leave behind.

Despite that difficulty, the payback of using CRM analytics to identify areas for revenue growth, cost-cutting, customer retention and other business needs will lure more companies to invest in CRM analytics. But the integration effort required to make this possible could cost 10 times the amount of annual sales of CRM analytic software, say some analysts.

CRM analytic software feeds on as much legacy data as it can access, which poses data migration and integrity problems. Data format and middleware standards are vital, as is a rigorous methodology for coding business logic into the software. Failure in any of these areas can doom a CRM deployment, practitioners say.

By Mark Hall

CRM Analytic Software Sales	
2001	$700 million
2005	$6.2 billion

SOURCE: IDC, FRAMINGHAM, MASS.

Success Begins With Girding for Complexity

TECH CHECK   DAVID GADRA planned for the day when customer relationship management (CRM) analytics would arrive at his $5.2 billion office products company. So when the multimillion-dollar IT overhaul known as Project E-Ikon was given the green light last year, he was ready.

Back in 1997, Gadra, CIO at Ikon Office Solutions Inc. in Malvern, Pa., hired developers from Infosys Technologies Ltd. in Bangalore, India, to build an Oracle data warehouse to standardize, migrate and store key data from the "literally hundreds of companies" Ikon was acquiring, he says. Having established standards, policies and processes for migrating external data sources has shaved up to 30% off the development time required to integrate analytic tools from Oracle Corp.'s Oracle 11i suite.

Gadra says he learned that if you adopt CRM analytics, you will confront application and data integration problems as well as the challenge of designing business logic into the analytical tools that operate on the data.

He argues that companies that venture into CRM analytics without having their data integration and management strategies in order are "in for trouble." Gadra is particularly emphatic about making certain that enterprise resource planning (ERP) systems are working properly before attempting to use the data with CRM analytic tools. "The CRM layer becomes a giant magnifying glass of an ERP problem," he says.

Data integration topped the list of steps taken by the Texas Education Agency as it ventured into CRM analytics. The Austin-based agency, which hands out more than $14 billion to primary and secondary schools in the state, began using analytic tools from Pleasanton, Calif.-based PeopleSoft Inc. in the fall to report more than 160 measurements about goals on everything from students' grade-level reading rates to ethnic-group dropout rates.

Dan Arrigona, director of budget, strategy and royalties at the Texas Education Agency, says that before it ran its first report, the agency had to deal with "data coming from different users, legacy student data, financial sources and other multiple sources."

Joyce Mlakar Smith, vice president of customer research at Columbus, Ohio-based Huntington Bancshares Inc., has been using analytics tools from Waukesha, Wis.-based NuEdge Systems LLC since 1996. Huntington uses the software to market services to consumers and small businesses.

For example, the tool has helped the $29 billion-in-assets regional bank identify deposit account holders who have home loans at other institutions, enabling the bank to compete for that business.

After more than five years, the integration work still hasn't ended. Smith says she is always combining external demographic data sources with her in-house data. And she would like to integrate other data from the bank's branches.

> CRM analytics have proven their mettle in relatively few companies.

Building in Business Logic

Whether IT chooses a best-of-breed product or one that's part of an integrated suite, IT managers still face the thorny problem of business logic.

"On the analytics side, the biggest source of failure has been failing on integrating the business logic into the tools," concludes Gareth Herschel, an analyst at Gartner Inc. in Stamford, Conn. "One out of two large-scale CRM efforts doesn't deliver what users expected." Just charting sales order workflow procedures can be daunting, he says.

And that's scratching the surface. Gadra says, "To e-enable our business processes, we have had to rethink everything we do from transaction processing to working with customers, employees and vendors."

Online Exclusive

CRM Analytics:
The Integration

Feeding The Data Omnivore

In a perfect world, data from every conceivable internal and external source would pour into a data warehouse dedicated to CRM operations. From there, data marts would capture subsets of the warehouse data and interact with one or more CRM analytical applications. In our imperfect world, however, the problem of integrating data into a usable and responsive data warehouse is fraught with problems and is often the Achilles' heel of CRM analytic projects.

SOURCES: META GROUP INC., STAMFORD, CONN., COMPUTERWORLD RESEARCH

Integrated Suites Vs. Best of Breed

VENDOR CHOICES The inherent data integration problem makes the question of whether to use best-of-breed CRM analytic products or ones integrated within application suites knottier to answer. For David Gadra, CIO at Ikon Office Solutions, who was already running an Oracle Corp. data warehouse, adopting the analytics in Oracle 11i "was very attractive."

Other users argue that the nature of the data needed to feed CRM analytic software, from e-mail to call reports written on personal digital assistants, is too diverse and unstructured to be managed in an integrated way.

"Best-of-breed apps will do best," says Tom Sultenfuss, vice president of operations and customer development at Spherion Corp. "There's just not much of a convergence of data sources, which means a tremendous amount of integration work still has to be done."

Going with vendors of best-of-breed applications has risks in a technology segment that's consolidating, but analysts and users agree that IT can minimize those risks by:

- Defining standard data formats, such as XML for data presentation or Open Database Connectivity for database-to-database exchanges.
- Ensuring data integrity through proven and published processes.
- Establishing data migration processes, such as storing procedures for graphical data.
- Choosing CRM analytics tools that support Web browser access.

Integrated Tools

Oracle packages its business intelligence products with Oracle E-Business Suite. It offers impressive integration with Oracle applications.

PeopleSoft Inc. in Pleasanton, Calif., has been in the analytics game since 1997. It targets vertical markets for "cross-chain analysis."

Siebel Systems Inc.'s offering lacks financial, manufacturing, human resources and other applications; however, the San Mateo-Calif.-based company's vast number of integrated vertical market offerings make it the next closest thing to an integrated provider.

Best-of-Breed Products

Dozens of small companies offer tools for a wide range of niches (for a listing, see www.computerworld.com/q?26892). Guy Crease, an analyst at Aberdeen Group Inc. in Boston, says that with so many business models in so many industries, specialized CRM analytic tools will always be necessary. Many are compatible with the integrated enterprise application suites.

Analyze Your Staff

CASE STUDY COMPANY WORKERS often have comprehensive and insightful data at their fingertips about the customers who call for sales or service. But management doesn't always have information about how those front-line employees are handling those phone sessions.

Spherion Corp., a $3.7 billion recruitment and outsourcing company in Fort Lauderdale, Fla., had just that problem. "We had lots of tools about customers," says Tom Sultenfuss, a vice president at Spherion. "We wanted a tool that gave employees measurements about how they were doing."

The company bought Emvolve Performance Manager from Performix Technologies Ltd. in Burlington, Mass. The product delivers a real-time score card on each employee's call, measuring hard statistics like the duration of the conversation or "softer" quality issues that managers grade from recordings. Workers can see their performance over time in different skill areas.

Sultenfuss attributes Spherion's 12% gain in productivity to Performix's software. "There's no magic," he says. "People get the information and they adjust themselves to perform better."

Customer data isn't the only thing analytic tools can measure.

Challenge

All-Star Players

CRM project teams must have a stellar mix of technical chops and business savvy. By Steve Ulfelder

CAREERS

NFORMATION TECHNOLOGY managers are finding that to maximize their often costly customer relationship management (CRM) investments, they must handpick team members who possess not only top technology skills but an elusive set of analytic and soft skills to boot.

At Hub Group Distribution Services, a subsidiary of Hub Group Inc., a transportation management firm in Arlington Heights, Ill., assembling a knowledgeable CRM team was critical. The company last year decided to move from Pivotal Corp.'s CRM software to PeopleSoft Inc.'s PeopleSoft 8.0 CRM. The primary deciding factor, says CIO Gint Dargis, was that Hub Group was already running PeopleSoft Financials 7.5. When it came time to expand the company's CRM system to the call center and field service, the promise of easy integration with Financials 7.5 swayed Hub Group toward PeopleSoft's sales and marketing CRM modules.

"We basically relied on PeopleSoft's consulting group to do the development," says Dargis. And with an IT staff of 17, Hub Group was lucky: Not only were several staffers familiar with PeopleSoft Financials, which eased integration of the CRM tools, but an internal power user who was also familiar with PeopleSoft served as a de facto business-side project manager.

Such cooperation is critical, experts say. Users and analysts strongly advocate having at least two project managers — one from IT and one from the business side — to effectively lead a CRM project. "You need a combination of intuitive and [idea-generating] abilities," says Frank Ingari, CEO of Wheelhouse Corp., a Burlington, Mass.-based CRM consulting firm.

These project managers must crack the whip to meet milestones. On the IT side, they must be adept dotted-line managers, since most of the people on the team — including the business-side project manager, consultants, systems integrators, users and others — won't be direct reports. For that reason, IT project managers must be patient and focus on project goals while jumping through bureaucratic hoops, says Beth Eisenfeld, an analyst at Gartner Inc. in Stamford, Conn.

The stakes are high. According to a recent report from Deloitte Consulting in New York, CRM projects can cost $10,000 to $50,000 per seat, depending on their complexity and the number of users. Services expenses, including those for internal IT staff, as well as for systems integration and vendor consulting, make up 38% of the cost, according to Gartner. And that number is climbing, says Eisenfeld, who adds that she has seen services expenses as high as 48% of the total project cost.

Business Chops

Beyond familiarity with the software, the most important skills for CRM staffers are two attributes that have long been in demand among technologists: business knowledge and the ability to communicate with users.

The growth of CRM underscores the need for technologists who grasp the broader business picture. "At some point in any project, you're going to want the best code jockeys you can get," Eisenfeld says. "But you want those code jockeys to understand the business, too. If they're just following specs without thinking, they're not adding value to the project."

For a decade now, CIOs and recruiters have been clamoring for IT workers to bolster their business knowledge, but that demand takes on new urgency with CRM because it's externally focused by nature. On internal projects, when push comes to shove, end users can be compelled to use a less-than-perfect application.

With CRM, the stakes are higher. "When you screw up, customers say, 'I'm not going to put up with this — I'm going elsewhere,' " Eisenfeld says.

Andrew Benedetti, branch manager of the Philadelphia office of recruitment firm RHI Consulting Inc., notes that communication skills and business knowledge often go hand in hand. Too often, businesspeople and technologists "speak two different languages and need a translator. That translator needs good communication skills and an IT background," he says.

"They don't necessarily need to be able to develop a program, but [they must be able to] read and understand it," says Benedetti. "And they need the business savvy. They need to be able to tell the business folks when something they ask for is not feasible."

While it isn't easy to find top-notch technologists with these skills and the knowledge of specialized CRM software tools, there's some good news for hiring managers: Experts say that in today's job market, there are so many applicants for CRM positions that employers can afford to be selective. ▶

Ulfelder is a freelance writer in Southboro, Mass. Contact him at sulfelder@yahoo.com.

A KNOWLEDGEABLE CRM team was critical to Hub Group Distribution Services, so the company used CRM software that was familiar to in-house employees, says CIO Gint Dargis.

MARC BERLOW

Staff Checklist

What to look for in potential CRM project staffers:

ANALYTICAL SKILLS. CRM projects capture vast amounts of data that must be analyzed. The ability to understand not only business rules but also the assumptions that underlie those rules is valuable and rare.

BUSINESS SKILLS. Pure IT types often have trouble grasping the big CRM picture. Look for technologists who enjoy working with other departments.

PEOPLE SKILLS. Heads-down IT workers can flounder in enterprisewide CRM projects. Seek out workers who have a good track record at gathering requirements for proposed applications; they know how to deal with an array of users.

Online Exclusive

Plenty of IT professionals are looking to latch on to CRM projects. Read these tips for making your résumé stand out from the rest: **www.computerworld. com/q?26732**

Quick Link

Keeping customer
records confidential
may be more than a
legal compliance issue
— it could enhance
the bottom line, too.
By Patrick Thibodeau

P RIVACY IS AN IMPORTANT PART of Royal
Bank Financial Group's customer rela-
tionship management (CRM) system.
Employees explain Web "cookies" to
customers, the bank offers cell phones
with special encryption chips for wire-
less transactions, and it has a pilot pro-
gram through which it gives away firewalls and other
security products to customers. That's right, for free.

So where's the profit in that?

For Peter Cullen, chief privacy officer at Toronto-
based Royal Bank, there's profit in privacy. "It is one of
the key drivers of a customer's level of commitment
and has a significant contribution to overall demand,"
he says.

As more countries adopt stricter privacy laws,
companies have to adapt their CRM systems to com-
ply. But Royal Bank clearly sees privacy as more than
a legal issue; it's also a pathway to a customer's loy-
alty and spending.

"We are very much in a relationship business,"
Cullen says. Privacy "plays a measurable part in how
customers decide [to] purchase products and ser-
vices from us. It brings us more share of the cus-
tomer's wallet."

Many companies are reluctant to offer customers
more privacy choices, such as opt-in features that
require getting customer permission to collect or
transfer personal information. Businesses fear they'll
lose their ability to leverage customer data and share
such information with affiliates.

Dennis Behrman, an analyst at Meridien Research
Inc. in Newton, Mass., sums up the prevailing atti-
tude: "You won't lose customers if you offer privacy
options, but you may lose access to your ability to
gain information."

But before companies can ask how privacy fits into
a CRM strategy, they need systems that can handle
privacy compliance. New domestic and international
laws are arriving rapidly. Australia, which enacted its
new privacy law in December, is a good example.

A section in Australia's law requires companies to
destroy customer data or make it anonymous once
it's no longer needed. That includes backup files,
says Andrew Handelsmann, an attorney at Deacons,
a law firm in Sydney. Compliance will involve more
than simple deletion to ensure that files are really
erased from drives, he says.

Complying with laws of this type, as well as inte-
grating privacy into a CRM strategy, requires changes

PETER CULLEN, chief privacy officer at Royal
Bank Financial Group, says privacy "plays a
measurable part in how customers decide [to]
purchase products and services from us."

Profita
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in IT systems and management. "It's keeping the system smaller, and it's more controlled," says Greta Ostrovitz, IT director at Cadwalader, Wickersham & Taft, an international law firm in New York. "We don't have these huge, huge databases that just have a life of their own and no one knows what's in it."

Tighter control is important to CRM strategies and legal compliance, Ostrovitz says. For instance, when her firm wants to send online and print mailings to clients in England, it must first get client permission for the mailings, according to U.K. privacy regulations. "In building a system, the key is maintaining an audit trail so you know exactly when something gets entered, who entered it, when was something mailed, what exactly got mailed," says Ostrovitz.

The Gramm-Leach-Bliley Financial Services Modernization Act, which took effect in the U.S. July 1, was one of the reasons Cleveland-based KeyBank revamped its massive customer databases.

KeyBank pulled about 50 million customer records held by various business units and distilled them into a single database of 11 million records.

"We wanted a customer-centric approach, where the customer just came to us once — at any entry point in the company — and we could then identify the rest of their relationships in the organization," says Angela Maynard, chief privacy officer at the Fortune 500 bank.

In going through the 50 million customer records, KeyBank also "cleaned" the data held by different business units to improve accuracy. It did this in part by matching the data against 200 million credit records maintained by Experian Inc. in Orange, Calif.

From a CRM perspective, this single view of the database means that if a customer asks to be excluded from certain forms of information sharing, as allowed

under the Gramm-Leach-Bliley law, this privacy request can be consistently applied across all business units, reducing the chance of a mistake, Maynard says.

"If you don't have all those [records] collected and connected together, there's a risk you are going to miss a record or two," Maynard says.

Although privacy issues present technical challenges to data management, a well-designed CRM system is much better suited to privacy controls than a hodgepodge of separate legacy systems, says Michael Beresik, national director of the privacy practice at New York-based PricewaterhouseCoopers.

Keeping Data Sacred

Most affected by privacy law compliance is the health care industry, which, under the Health Insurance Portability and Accountability Act (HIPAA), must have strict access controls for records.

Providence Health System, a Beaverton, Ore.-based health care provider with about 780,000 members, is developing a system that limits access to medical records on a need-to-know basis. A financial analyst, for instance, would see only the customer data pertinent to his work, says Chris Apgar, Providence's data security and HIPAA compliance officer.

These changes, although not directed at customers, are nonetheless a form of CRM because customers expect their health care records to be confidential. "One of the big selling points is how well you are taking care of my health data — that's one of those things that's sacred," Apgar says.

But many industries are worried about the unsettled nature of privacy laws. In addition to various privacy initiatives in Congress, states are free to adopt their own privacy standards. Some, such as California, may require a customer opt-in policy for financial record sharing, instead of the federal opt-out approach, which requires consumers to take action if they want to stop record sharing.

"We are holding our breath that [lawmakers] don't change direction, and we will have to build something totally new," says Maynard.

Internationally, U.S. firms that transfer customer and personnel data out of Europe have to comply with European privacy laws. These laws allow customers access to data that's held about them, and let them determine how that information is used.

Some U.S. firms, such as consumer products giant Procter & Gamble Co. in Cincinnati, have adopted as their global business rule the European privacy standard, which is gradually being followed by other countries. This approach creates uniformity and reduces potential compliance costs, the company says.

Analysts say e-commerce companies can lose business if consumers don't trust that personal information will be carefully guarded. Forrester Research Inc. in Cambridge, Mass., estimates that total online spending last year of $47.6 billion would have been $15 billion higher had it not been for consumer privacy concerns. Companies can increase sales by making their privacy policies clearer and easily understandable and accessible to consumers, says Christopher Kelly, a Forrester analyst.

On the other hand, active online consumers don't seem to pay much attention to privacy policies, according to data compiled by WebSideStory Inc., a company that analyzes Web site data. In its analysis

Tips for Managing Privacy

- **Customer data has to be "clean."** If customer records don't match across business units, privacy preferences may not be consistently applied. This could upset a customer who thought he opted out and learned otherwise, and it could also create legal risk.

- **Smaller, tighter databases are best.** End users say big, bloated databases undercut privacy management.

- **Enforcement risk is rising.** The Federal Trade Commission (FTC) is increasing its enforcement staff, and most experts say European authorities are gearing up for some high-profile privacy law enforcement actions.

- **Remember: There's no legal difference between off-line and online data.** The FTC is making that clear.

- **Audit trails are important.** Proving compliance with the law means having records.

- **Nothing is certain.** Congress is considering new privacy laws as well as changes to old ones. There is no letup in the passage of new international laws.

– Patrick Thibodeau

of page views, "the privacy page rarely makes the top 100" of anyone's site, says Randy Broberg, chief privacy officer at the San Diego-based company.

"The opinion polls that say that everybody in America is frightened to death about privacy overstate the reality of people who are actually surfing the Internet," Broberg says.

But based on its internal studies, Royal Bank is convinced that privacy keeps customers coming back, says Cullen. The secret to effective CRM is delivering value to the customer, he says.

If a customer starts turning off the information flow, does that indicate that he's concerned about his privacy, "or does it say that we haven't generated enough value to them?" asks Cullen.

"We have a high level of trust with our customers right now. It's ours to lose," he says. "But there are huge benefits to doing things that continue to reinforce that trust." ▶

Online Resources

To find global privacy laws, corporate privacy codes and privacy news, visit the following Web sites:

Quick Link
www.privacyexchange.org
www.privacy.org
www.computerworld.com/q?s1200

NICHOLAS PETRELEY

Lessons in CRM

CUSTOMER RELATIONSHIP MANAGEMENT and security are inseparable. That is, unless you're Pacific Bell or MCI. To illustrate, allow me to tell you a little story. It all started when I noticed that someone was using my MCI calling card to make calls to Germany. I canceled the calling card and, just to be on the safe side, switched my long-distance carrier to Sprint.

About a week or so after I received my Sprint materials, I got a call from MCI. I expected it to be a pitch to come back, but it wasn't. The MCI customer representative was checking to see if the recent calling card calls from Colorado to Germany were legitimate. The woman with the friend in Germany had apparently switched my long-distance carrier back to MCI.

I canceled the MCI account and then created a new one without the international plan and password-protected it. As an extra safety measure, I had my local phone company, Pacific Bell, put a Primary Interexchange Carrier (PIC) freeze on my phone number to stop anyone from changing long-distance carri-

ers. I password-protected that account, too.

The next time I called Pacific Bell, I couldn't talk to customer service until I agreed to pay on my delinquent account. Delinquent? Well, come to think of it, I haven't received any statements in the past few months. I managed to get a human on the line and asked if there was a way I could pay off my bill via the Web. She said that if I created a Web account, I would stop receiving statements in the mail. Suddenly it became clear. Someone had already created a Web account for my number, which is why I wasn't receiving my statements.

Pacific Bell's system won't let me create a new Web account for the same phone

OPINION

number, which is the way it should work. The Pacific Bell representative couldn't change the Web user name or password or cancel the Web account, which isn't the way it should work. She asked another department to cancel the Web account and said a specialist would call me back.

Still Locked Out

As I write this, it's been well over a week since I made that call. The bogus Web account is still active. No calls from specialists. No responses to e-mails. I'm still locked out of the Web account.

This piqued my curiosity about how MCI handles Web accounts. MCI requires your account number or your calling card personal identification number (PIN) to create

one. I hadn't received an MCI bill with my account number yet, so I entered my calling card PIN. It rejected the attempt. My MCI account had been compromised again.

I called MCI to get my account number. The representative gave it to me without asking for my account password. This fellow also offered to remove the PIC freeze. It's really easy, he said. All he has to do is call an 800 number. No wonder my account was so easily compromised. (MCI handled my next call properly, so it depends on the representative.)

I created an MCI Web account. (Unlike with Pacific Bell, you can create as many MCI Web accounts as you like for the same phone number.) I could see the calling card PINs on all five new calling cards. And although I could add new services, the Web software offered no options to re-

move the cards, the international calling plan or any other services.

So what have we learned?

Lesson 1: Integrate your CRM solutions. At the very least, synchronize the security data. Pacific Bell customer service uses your phone number to find your account. The corresponding Web account should therefore be based on the same phone number, not an arbitrary user name. Both should require the same password, too.

Lesson 2: Enforce security policies in software. The CRM software that customer service representatives use should prevent the representatives from making changes to a customer's account until they've asked for and entered the customer's password.

Lesson 3: Avoid blatant stupidity. If you haven't already created a Pacific Bell Internet account, anyone can create one for you — and lock you out of it — with little more than your phone number. MCI requires an account number, but if you want one, just glance at someone's unopened MCI bill. Their account number will be visible right through the address window on the envelope. ▶
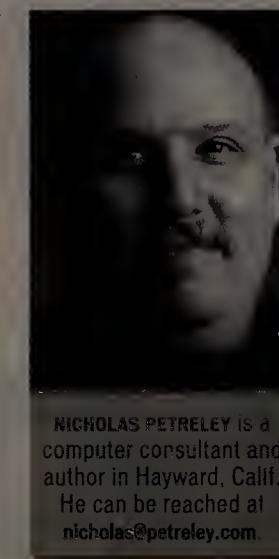
NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at nicholas@petreley.com.

Vendor Analysis

■ **Siebel Systems Inc. is still the functional and market-share leader,** but the enterprise resource planning vendors are finally narrowing the gap for CRM applications. This has created a four-horse race among Siebel, Oracle Corp., PeopleSoft Inc. and SAP AG.

■ **Siebel is rated tops for sales force automation,** and SAP is strong in order management. Oracle, SAP and PeopleSoft score high on integration, but only when the integration involves their own applications. Otherwise, the advantage swings to Siebel.

■ **Onyx Software Corp., Pivotal Corp. and Interact Commerce Corp.** are still best suited for CRM deployments at midsize businesses.

■ **E.piphany Inc.** is best for CRM analytics and marketing.

SOURCE: AMR RESEARCH INC., BOSTON, OCTOBER 2001

Mildly Satisfied

Asked to rate the CRM satisfaction within their organizations, 160 IT managers responded as follows:

Satisfied — 36%
Mildly satisfied — 37%
Extremely satisfied — 4%
Mildly disappointed
Extremely disappointed — 1%
17%
Disappointed — 5%

SOURCE: CUTTER CONSORTIUM, ARLINGTON, MASS., MAY 2001

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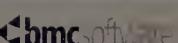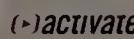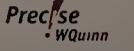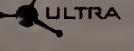
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IT Careers in IT Security

A year ago the requirements for a job in the information technology security area were broad and general. That's changed, as companies look for more specific expertise in addressing critical IT security challenges for the nation and for commercial operations.

Northrop Grumman Information Technology is among the leaders in information security. The company plans to hire more than 4,000 IT professionals in 2002. The projects are far reaching, from integration of databases between the Immigration and Naturalization Service and Federal Bureau of Investigation, to the Communications Support Processor for the Millennium through the U.S. Air Force Research Laboratory. The company also delivers information security services through agency-wide contracts, such as the General Services Administration's Safeguard Program and across the Department of Defense through the Defense Information Systems Agency's I-Assure Program.

Michael Patrick, director of workforce recruitment and planning, said the company will be hiring network engineers, systems engineers, software developers, but especially those with experience in information security. **Northrop Grumman** is recruiting individuals who have experience on computer emergency response teams and with specific platforms, such as Windows NT, UNIX and Sun Solaris. "We look for true examples of a candidate's successful work on teams and in collaboration with both colleagues and customers," he said. While **Northrop Grumman IT** will hire for positions at more than 400 locations across the country, the most intense hiring will be in northern Virginia, Florida, Colorado, southern and northern California.

Patrick said the nature of the company's work is highly significant. "These are jobs that can play to your skills, but also where you can make a difference," he said. "We have a tremendous amount of diversity in the types of programs on which you can apply your skill sets. The diversity of our customers is also an attractive proposition – federal, local and state government, federal intelligence agencies and commercial clients. And, there is flexibility in research and development, a commitment to technology that comes with working for a tier one company."

Northrop Grumman Information Technology employs more than 20,000 people and had sales of $3.8 billion last year.

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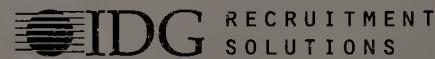
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COMPUTER SOFTWARE ENGINEER BEMIS COMPANY, INC. - PAPER PACKAGING DIVISION

Title of Position: Computer Software Engineer - Manufacturing Applications

Position Responsibilities: Develop and modify software applications to improve the effectiveness of current procedures within the packaging industry and design customized software applications targeting PC/LAN and client/server technology. Implement software applications on the LAN platform and perform testing of applications without disrupting production systems. Research, evaluate, and select business applications packages which meet necessary design criteria and design customized software packages to conform to manufacturing applications. Create all necessary operations and help desk documentation for the software applications which are implemented.

Minimum Requirements: Master's Degree in Industrial Management, Computer Engineering, or Computer Science, or the equivalent foreign degree as determined by a written evaluation. Requires three years of progressive, post bachelor's degree experience in software applications engineers.

Qualified candidates e-mail resume to csebemis@hotmail.com or mail to:

Shirley Matherly
Bemis Company, Inc.
P.O. Box 905
Terre Haute, IN 47808.

Bemis Company is an equal opportunity employer.

Systems Analyst to analyze user requirements, procedures, and problems to automate processing & improve existing information systems. Use CC++, HTML, Visual Basic, Database design. Must have Bachelor degree. Min 3-month exp. CV: 3645 Warrensville Center Rd. Ste 321 Shaker Hts, OH 44122. No calls.

Software Engineer. Sought by Denver, Colorado software development and consulting company to work in various unanticipated locations throughout the U.S. Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of design within time and cost restrains. Consult with clients to define needs or problems. Use of Windows NT, Java, JSP, PowerBuilder, SOL, PL/SOL, GUI and Oracle. Reqs. Master's or equivalent in Computer Science, Computer Engineering or related field of study. Plus 3 years in the job offered or 3 year in a related occupation such as Programmer Analyst or Software Programmer. Will accept a Bachelor degree and 5 years of progressive experience in lieu of required education and experience. $85,000/year, 40/hrs/wk, 9AM-5:30PM. Respond by resume to Colorado Department of Labor & Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 5011770

Sr. Software Engineer sought by software development company in Denver, CO to work in Denver. At a senior level, engage in full life-cycle software application development and enterprise wide integration of distributed systems that operate on AS/400, UNIX and Windows NT platforms and access relational database management systems. Analyze requirements. Create designs and design documentation. Code, test, and debug the software applications. Use object-oriented design techniques, telecommunications protocols, UML and JAVA in the development process. Mentor other software engineers. Requires Master's degree in Computer Science; 1 yr exp. developing computer software applications for distributed systems using object-oriented design techniques and telecommunications protocols; working knowledge of UML and JAVA programming. M-F; 8am-5pm; $77,000/yr. (2 openings) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202 & refer to Job Order Number CO5011574.

SYSTEMS PROGRAMMER sought by OH Production Co. to coordinate installation of computer operating system; maintain/modify software and hardware; analyze performance indicators; review system capabilities; train users; initiate test of system; and change system software. Min. req. 6 yrs. in job or job-related exp. Exp includes programming. Resumes to ADMA Products, Inc., 8180 Boyle Pkwy., Twinsburg, OH 44087. No calls. EOE.

Software Engr-Research/design/develop software sys in conjunction w/hardware prod development; apply principles/techniques of comp science & engg; consult w/ engrs to evaluate interface of hardware/software & operation/performance/requirements of system. Bach or equiv in Comp Science or Commerce + 18 months exp in position or as Sys Analyst must incl Basic/Cobol Prog. Fax res: 734-941-3707

Amdocs, a leading developer of software solutions for the telecommunications industry is seeking team players with strong technical & personal skills for the following positions at our Chesterfield, MO location:

Systems Analysts
--to design, develop, code & test software solutions for telecomm switch control & customer care. Req. 1 yr exp. as systems analyst or programmer. Must have exp. w/SOL & PowerBuilder through education or employment. Must have exp. w/telecomm projects.

--to analyze existing & proposed telecomm info systems. Req.: 1 yr exp as systems analyst or programmer. Must have exp w/C/C++, SOL, Oracle & Unix through education or employment.

--to analyze output from batch processes for preruns, homeruns and outcollects. Req. 2 yrs. exp. as systems analyst or network administrator. Must have exp. w/C++, Java, SOL & HTML. Must have exp. w/telecomm projects.

--to analyze new & existing telecommunications customer care & billing systems for improved production & workflow. Req. 2 yrs. exp. as systems analyst or software development occupation. Must have exp. w/ Visual C++ & Oracle in a Windows environment or exp. w/Oracle, SQL, and either Visual Basic or Unix and Windows NT.

--to prepare workflow charts & diagrams w/details of existing & proposed telecomm information systems. Req. 2 yrs exp. as systems analyst or programmer. Must have exp. w/C/C++ & Oracle through education or employment.

--to analyze, implement, test & support new & existing telecomm customer care & billing systems. Req. 2 yrs. Exp. as systems analyst or programmer/analyst or software development occupation. Must have exp. w/PowerBuilder & SQL or PowerBuilder & Oracle through education or employment.

All Systems Analyst positions require a Bachelor's Degree in Computer Science, Math, Physics, Engineering or a related discipline.

Jr. Systems Analysts
--Under supervision of Sr. Systems Analyst, develop, design, test & code software for telecomm customer care systems. Req: 2 yrs. College or Assoc. Deg. in Computer Science or related discipline and one year exp. as Jr. Systems Analyst or in software development occupation. Must have exp. w/C, COBOL & VAX/VMS & exp. w/telecommunications projects.

Due to the unpredictable growth of the telecommunications industry, candidates for all positions must be willing to temporarily relocate to client sites throughout the U.S.
Send resume to:
Amdocs, Inc.
1390 Timberlake Manor Parkway
Box SL20
Chesterfield, MO 63017
Fax: 314-212-7076
jobs@amdocs.com

Software Developer to research, design and develop Client/Server & N-Tier Internet software systems on WinNT/2000 with VB6, DCOM/COM+, XML, DHTML, OLAP, ADO & PL/SOL. Master Degree in Computer Science. Min 1 yr exp. CV: 4670 Richmond Rd. Warrensville Hts., OH 44128. EOE.

Software Engineer for company in Lisle, IL to act as technical team leader to assist Project Manager to install company product suite at customer work sites using C/C++ programming on Unix platform. Utilize knowledge of file I/O handling, use of embedded SOL, (especially ORACLE) and Unix system calls. Specify clients' hardware and software requirements for the installation of company product applying detailed knowledge of client server systems. Oversee loading of clients' existing mainframe database/application into the company's product data model and database and trouble shoot communication problems on client server systems. Train client and junior company technical personnel on use of company product. Prepare training materials. Develop standard implementation methodology and structure for the company. Set up and run client environment during testing and training phase. Apply knowledge of interaction between the company application and accounting packages and methods as they interface to the accounting systems. Apply knowledge of Unix at the user and system administrator levels for all types of Unix. Must have B.S. in Computer Science, Engineering, Physics or related and at least two years experience in the job offered. 40hrs/wk, 8:00 am to 5:00 pm., $81,000/yr. Applicants must show proof of legal authority to work in the U.S. No Calls. Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, IL 61605, Attn. Leila Jackson. Reference # V-IL-30361-J an employer paid ad.

Applications Engineer sought by company in Englewood, CO specializing in software development, sales & services to work in Englewood & other unanticipated job sites in the US. Design & develop geographic information systems software for customer-specific benchmarks as part of a pre-sales team. The software applications are client/server or web based. The applications incorporate a relational database management system, & the client/server applications run on UNIX or Windows NT operating systems. Analyze customer requirements; code, test, debug & modify software applications as necessary. Implement & present benchmark & customer software to customers & the internal sales department. Utilize HTML & proprietary languages in designing & developing the software applications. Requires Bachelor's or foreign equivalent in engineering or science, including biology; 2 yrs. designing & developing geographic information systems applications; 8am-5pm, M-F; $85,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO5012416.

Sr. Information Systems Analyst (2 pos) Englewood, CO. Analyze, dsgn, dvlp, test & implmt web-based s/ware d/base applics. Formulate & dsgn s/ware systm. Dvlp & direct testing procedures & consult w/customers concerning maintenance of s/ware systms. Work in multiplatform operating envrmt & in n/worked envrmts using Java, JSP, Java Applets, EJB, JDBC, Java Servlets, VB, ASP, & Oracle. MS Comp Sci, CIS, MIS, Eng, Math + 1yr exp in job offd or related occupation. 40hr/wk, $73,500/yr. Application by resume only to CO Dept of Labor & Employment, Attn: Jim Shimada, Tower 2, Ste 400, 1515 Arapahoe St., Denver, CO 80202-2117, referring to JO# CO5012184.

Programmer Analyst (Micro/Web) - Multiple Openings

Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance and support of integrated client-server based systems for business, financial, banking, manufacturing and other commercial business application systems in a multi-hardware/multi-software environment using centralized or distributed relational database management systems, 4GLs (Fourth Generation Languages) and other GUI (Graphical User Interface) front-end tools. Analysis, design and development of client-server applications using object-oriented methodology. Bachelor's Degree (or equivalent) in Computer Science-Math/Engineering/Science/Business-Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 2 of B; or 2 of A and 1 of B; or 3 of A. A includes Oracle, Sybase, Informix, SOL Server, Progress, Ingres, Access and Proxy Server; and B includes PowerBuilder, Visual Basic, MS-Windows, Visual C++, JAM, APT-SQL, SQL*FORMS, ESOL/C, GUPTA SQL, Progress 4GL, Informix 4GL, Ingres 4GL, C, Java, Lotus Notes, HTML, CGI, IIS, ASP, Front Page, Perl and Java Development Kit (JDK); High mobility preferred. 40 hrs/week, 8 am - 5 pm. $66,671 - $78,000 per year. Qualified applicants should contact or send resume to JS Supervisor, Greene County Team PA Career Link, 4 West High Street, Waynesburg, PA 15370-1324. Refer to Job Order # WEB 222677.

Multiple openings for temporary and permanent Systems Analyst (provide strong technical leadership), Project Manager (managing on-site and offshore programming resources; interfacing with users and management), Programmer Analyst, Database/Software Engineer and related positions from entry-to senior-level at project sites throughout the U.S. to analyze, design, develop, program and test business applications systems involving Data Warehousing, E-commerce, Internet, OLAP and others using Object Oriented Programming/Design principles, relational database modeling, mapping principles and current web technologies as well as technical and functional knowledge of JDEdwards. Particular tools include one or more of: OS/400, DB2/400, RPG/400, CL, JDE, JDE-One World, JDE Case tools, Sun Solaris, COGNOS, PL/SOL, COBOL, CICS, Oracle, Developer2000, Visual Basic, Upfront, JAVA, UNIX, Windows NT, C/C++ and Progress4GL. B.S. in Comp. Sci., Eng'ing, Math or related areas. Degree in finance, acctg, or taxation will be a plus. Will accept combination of education, training and experience in lieu of portion of degree. Prior experience and M.S. required for some positions. Competitive salary/bonus/benefits offered. Must have unrestricted U.S. work authorization. Send resume to: Attn: Mr. Ram Sidhaye, SOM, Inc., P.O. Box 922545, Norcross GA 30010.

Programmers needed for mid level positions in Lexington, MA. Qualified candidates possessing MS/BS or equivalent and relevant work experience should apply. Experience with 3 of the following: Visual Basic, VBA, Java, Oracle, SOL Server, Unix, PL/SQL, COBOL, DB2 or ADF language. Fwd resume: Stellar Corporation HR Dept., 594 Marrett Rd, Lexington, MA 02421. No Walk-ins

Programmer Analyst (SAP) - Multiple Openings

Structured systems analysis, process engineering, design, configuration, prototyping, development, testing, quality assurance, implementation, integration, maintenance and knowledge transfer of SAP R/2 or SAP R/3 systems for business, financial, banking, manufacturing and other commercial application systems in a multi-hardware/multi-software environment using centralized or distributed Relational Database Management Systems (RDBMS), Fourth Generation Languages (4GLs) and other GUI (Graphical User Interface) front-end tools. Bachelor's Degree (or equivalent) in Computer Science-Math/Engineering/Science/Business-Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 2 of B; or 2 of A and 1 of B; or 2 of A; or 2 of B. A includes FI (Financial Accounting), CO (Controlling), AM (Fixed Asset Management), SD (Sales and Distribution), MM (Materials Management), PP (Production Planning), OM (Quality Management), PM (Plant Maintenance), HR (Human Resources), PS (Project System), WF (Workflow), IS (Industry Solutions), BS (Basis Architecture); B includes ABAP/4, Screen Painter, Menu Painter, SAP Script, Correction/Transport, Data Dictionary, Function Modules, User-Exit Routines, SAP Installation; High mobility preferred. 40 hrs/week, 8 am - 5 pm. $66,671 - $78,000 per year. Qualified applicants should contact or send resume to: JS Supervisor, Fayette County Team PA CareerLink, 32 Iowa Street, Uniontown, PA 15401-3513. Refer to Job Order # WEB 222667.

Sr. Consultant - Customer Relationship Mgmt. (CRM). Duties: Design, develop & implement CRM system arch. to support clients' e-business sales, mktg. & service using Siebel CRM, Actuage Reports & Oracle. Assist w/design of interfaces for Enterprise Application Integration (EAI). Configure & implement Siebel Financial Services modules & coord. & execute the upgrade of Siebel Financials Mid Market appl. Write & test Siebel VB code. Perform data migration from Oracle database to DB2 database for CRM appls. using DataJunction. Implement Siebel 7 Call Center. Perform Oracle DBA role for Siebel appls. Mentor jr. consultants. Requires: B.S. (or foreign equiv.) in Comp. or Info. Sci., Eng. or related field & 4 yrs. exp. in the job offered or 4 yrs. exp. as a Consultant or Software Eng. Concurrent exp. must incl.: 3 yrs. exp. designing system arch., 6 mths. exp. working with EAI & 6 mths. exp. using Siebel tools. EOE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Send resume (no calls) to: Diane Tuccito, AnswerThink, Inc., 817 W. Peachtree St., Suite 800, Atlanta, GA 30308.

SOFTWARE ENGINEER

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Entigo, Oracle, EJB and iPlanet. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of Entigo, Oracle, EJB and iPlanet. Salary: $65,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Manager, Indiana Job Center, 350 North Fourth Street, Indiana, PA 15701-2000, Job No. WEB 222196.

BAAN APPLICATIONS DEVELOPER

Will serve as principal applications developer in transition to a global ERP information system. Will interpret business unit requirements to develop a technical design within the BAAN information system so that the functional requirements are converted into a functional/technical solution. Will use BAAN development tools, other proprietary BAAN software development tools, and standard database applications under a number of operating platforms. Will perform BAAN Tool application development including Distributed Data Collection (DDC), RF Barcoding, and Client Server (event-oriented) development. Will perform large system technical analysis, design and programming.

Candidates must have a Master of Science degree in Computer Science and two years of experience as a BAAN Applications Developer or Systems Analyst. The experience must include use of BAAN tools.

Work Schedule: 40 hours per week, 8:00 am to 5:00 pm, Monday through Friday.

Wage: $80,000 per year.

Employer paid ad. Send resumes to MDCD/ESA, P.O. Box 11170, Detroit, Michigan, 48202. Include Reference No.: 201570

Programmer Analyst (Micro/Web) - Multiple Openings

Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance and support of integrated client-server based systems for business, financial, banking, manufacturing and other commercial business application systems in a multi-hardware/multi-software environment using centralized or distributed relational database management systems, 4GLs (Fourth Generation Languages) and other GUI (Graphical User Interface) front-end tools. Analysis, design and development of client-server applications using object-oriented methodology. Bachelor's Degree (or equivalent) in Computer Science-Math/Engineering/Science/Business-Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 2 of B; or 2 of A and 1 of B; or 3 of A. A includes Oracle, Sybase, Informix, SOL Server, Progress, Ingres, Access and Proxy Server; and B includes PowerBuilder, Visual Basic, MS-Windows, Visual C++, JAM, APT-SOL, SOL*FORMS, ESQL/C, GUPTA SOL, Progress 4GL, Informix 4GL, Ingres 4GL, C, Java, Lotus Notes, HTML, CGI, IIS, ASP, Front Page, Perl and Java Development Kit (JDK); High mobility preferred. 40 hrs/week, 8 am - 5 pm. $66,671 - $78,000 per year. Oualified applicants should contact or send resume to Manager, Washington County Team PA Career-Link, Millcraft Center, Suite 150LL, 90 West Chestnut Street, Washington, PA 15301-4517. Refer to Job Order # WEB 222684.

Software Developer for processing and encoding texts in Asian languages. Reqs: Masters + 2 years exp.

- statistical clustering methods;
- semantics indexing;
- multimedia databases and networking.

Teragram, 236 Huntington Ave. #302, Boston, MA 02115, Attn: Yves Schabes. NO CALLS

COMPUTER

BEA Systems, Inc. is the E-commerce Transactions Company powering many of the world's most innovative companies including Amazon.com, Federal Express, E*Trade, United Airlines, DIRECTV, Quest, Nokia, and Priceline.com. We currently have the following exciting opportunities in our San Jose and San Francisco, CA; Liberty Corner, NJ; Boulder, CO; Redmond and Bellevue, WA; Burlington, MA; Cary, NC; and, Plano, TX site:

Software Engineers (all levels)
Consultants (all levels)
Sales Engineers · Consultants (all levels)

You may use our online resume form by visiting www.beasys.com. You may also send a hard copy, indicating position of interest, to: BEA Systems, Inc., Attn: HR, 2315 North First Street, San Jose, CA 95131. Fax: (408) 570-8901. E-mail: jobs@beasys.com. Principals Only. EOE.

SENIOR SOFTWARE ENGINEER to design, develop, test and implement application software in a client/server environment using object-oriented programming, Sybase, Visual Basic, Visual C++, MFC, Crystal Reports, Transact SQL and MS Test under UNIX and Windows 2000/NT operating systems. Require: M.S. degree (or equivalent) in Computer Science/Engineering, or a closely related field with two years of experience in the job offered; A B.S. degree with five years of progressively responsible experience will be considered equivalent to an M.S. degree. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Roz L. Alford, Principal, ASAP Staffing, LLC, 3885 Holcomb Bridge Road, Norcross, GA 30092; Attn: Job HH.

Premier Softech, Inc. has openings for Senior Programmer Analysts (PA) and Senior Unix and Database Administrators (SA) for locations in New Jersey and elsewhere, with at least two years of experience in any of the following skills:
PA: Java, JDK, Swing, Servlets, JDBC, Java Beans, RMI, EJB, JSP, JavaScript, HTML, MS Access, VC++, VB; also Cobol, DB2, PL/1, NDM, SP2, Easytrieve, MQ Series, MVS
SA: Unix (Solaris and AIX) w/Oracle.
Positions require a Masters degree (or equivalent degree and/or experience is also accepted). Must have legal authority to work in the US. Excellent Pay and Benefits. Please indicate the position applying for. Mail resume with proof of work status: HR, Premier Softech Inc., 203 Yarrow Circle, Dayton, NJ 08810 or email to jobs@premiersoftech.com

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Programmer/Analyst to analyze, design, develop, test, implement and Support web based application, software systems in client/server environment, Using J2EE technologies, XML, HTML, ORACLE, SOL SERVER, WEBLOGIC, WEBSPHERE, I-PLANET, NETSCAPE APPLICATION SERVER, Visual Basic On UNIX, Sun Solaris and Windows Platform. Require: BS Degree in Computer Science, an Engineering discipline, or a closely related field with more than 1 year of progressively responsible experience in the Job offered or in the related occupation of Programmer/Analyst or Programmer. Extensive travel on assignments to various client sites within the US is required. Salary $66,000/-per year. Apply by resume to: Ravi Kandimalla, President, EVEREST COMPUTERS INC., 900 Old Roswell Lakes Parkway, Suite 300, Roswell, GA-30076: Attn: JobBM

Software Engineers

Smart Stream, Inc. seeks Software Engineers in our Omaha, NE location. Positions involve analysis, user interface and data flow design, development and implementation of business software applications. Also includes programming, testing and documentation of applications. Using tech's including Visual Basic/Studio/Interdev, SQL, Microsoft OS, IBM, DB2, Visio, MO Series, COBOL, IMS, VSAM, CICS, ISPF, SDF, TSO, MVS JCL, Manugistics, UDB-DB2 for Windows NT, Xpediter, C, C++, Unix, COM, HTML, IIS Server, ASP. A qualified applicant should hold a Bachelors or equivalent in Comp. Sci, Eng, or related and 2 yrs of relevant exp. Applicants should send resume to Smart Stream, 10665 Bedford Avenue, Ste 101, Omaha, NE 68134.

SOFTWARE ENGINEER to design, develop, implement, install and maintain Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) application software in a client/server environments using Oracle Financials, MS SQL Server, Business Objects, COGNOS, Web Intelligence, Broadcast agent and Visual Basic on Windows and UNIX platforms. Require: Bachelor's degree in Computer Science, an Engineering, Business Administration, or a closely related field with four years of experience in the job offered or as a Systems Analyst. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Bharat Aluri, President, Aluri Bharat Consulting, Inc., 3235 Roswell Road, Suite 606, Atlanta, GA 30305; Attn: Job SP.

NETWORK ENGINEER, Bklyn, NY Supervise, coordinate installation & perform monitoring of data communication network. Systems diagnostics & troubleshooting; explain & demonstrate all networks functions to staff. $71,427/hr; 35/hrs/wk, 9am-5pm. B.S. degree in Math/Comp.Sci/Inf.Syst. req. 2 yrs/exp/req. Fax resume to: Mr. Mulerman, Apex Car & Limousine Serv. @ 718-522-0427.

Software Engineer Manage, design, draft specs, create sys plans, develop, configure & analyze various comp sys, software apps, web interfaces, custom reports, custom GUI & internet apps; manage clients & client integration issues; define & determine bus & sys reqs; provide tech solutions for bus systems; use Oracle, C/C++, SQL Server, Access 2000, VBScript, Java, LotusScript, JavaScript, Visual Basic, and JSP Must have BS in CS, or rel field + 2 yrs exper in job offrd. fax resume to: 646-792-9210, attn: Tigris HR.

Multiple positions for professionals with industry exp. (various skills combination reqd.) in HP-UX 11.0, Korn Shell, SQL Navigator, TOAD, C/C++, Oracle 8i, Autosys, Unix Shell Scripts, Pro*C, etc. BS or equiv. CS, Comp. Engg, Elect. & Comm. Engg. Pay matching exp. Foreign educ. equiv &/or combination of educ/exp. accepted. Travel/relocation reqd. Res. & salary expectations to Paramount Software Technology, Inc., 7187 Jonesboro Rd. Suite C, Morrow, GA 30281.

Medical Imaging Software

Medical Imaging Software Engineer to participate in the development of a 3D image display product for a new medical modality. Must have extensive image processing experience, or gaming experience in the medical industry. Must be familiar with Dicom and FDA software V&V protocols. Must have extensive knowledge of C++, API's and SOL. Master's Degree in Computer Science, or Bio-Medical Engineering required. $65K / year. Send Resume to HR @IDSI, 6531 NW 18th Ct., Plantation, FL 33313.

Multiple positions for professionals with industry exp. (various skills combination reqd.) in Orbix 2.3, Orbix Web2.0.5, JavaScript, HP-UX 11.x, C/C++, Oracle 8i, TogetherJ, Hawk, Tibco Rendezvous, Unix, Pro*C, etc. BS or equiv. CS, Comp. Engg, Elect. & Comm. Engg. Pay matching exp. Foreign educ. equiv &/or combination of educ/exp. accepted. Travel/relocation reqd. Res. & salary expectations to Paramount Software Solutions, Inc., 2000 Powersferry Rd., Ste. 300, Marietta, GA 30067.

A behavioral health services company seeks a systems administrator for its main office located in the City of Detroit. The position requires at least three years of college with courses in computer science, and two years experience as a systems administrator, computer programmer or software developer. Send resume to Director, Quality Behavior Health, Inc., 745-751 E. Grand Blvd., Detroit, Michigan 48207

Software Developer

Design, modify and maintain specialized software applications. Req. MS in Computer Science + 1 yr related experience. Send resume & cover letter to BLC Consulting, Human Resources, 26 Jefferson Court, Wethersfield, CT 06109.

AD INDEX

SALES OFFICES

Computerworld Headquarters:
500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
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ACCOUNT DIRECTOR: Lisa Ladle-Wallace, 5242 River Park Villas Or., St. Augustine, FL 32092, (800) 779-5622, Fax. (800) 779-8622; FIELD MARKETING EXECUTIVE: Oavid Loyed, 102 Maverick Orive, Harvest, AL 35749, (256) 851-0885, Fax: (256) 851-0845

COMPUTERWORLD
PRODUCTION: Production Manager/Beverly Wolff; PRINT DISPLAY ADVERTISING: Toula Karayan, (508) 620-7747, Fax: (508) 879-0446; DISTRIBUTION: Distribution Manager/Bob Wescott; AUDIENCE AND MARKET RESEARCH: Director/Joanne Oteri; Research Analyst/Seanna Maguire

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NEWS

Enron

sobering effect on boardrooms across the country," said Dick Hudson, former CIO at Houston-based oil drilling company Global Marine Inc. and now president of Hudson & Associates, an executive IT consulting firm in Katy, Texas. "You can almost see a bunker mentality taking hold in the senior suites."

Hudson said he has heard from CEOs who have been reviewing their risky IT ventures, such as application service provider spin-offs or extraneous e-commerce services, to make sure they don't have any investments that will blow up in their face. If they find any such ventures, he added, "they will probably retrench. It's a bottomless pit."

Charlie Lacefield, who retired from his position as CIO at Midland, Mich.-based Dow Corning Corp. three years ago, warned that although IT innovation is critical for companies to thrive in a global economy, those that stray too far from their core business strategies could see their plans backfire on them, as it did with Enron.

"If IT is not the core competency of the organization, then why throw away the core competency?" asked Lacefield, who now lives in North Carolina. "Why would you want to do that with so many IT companies out there ... that already have a running start on you?"

Hudson said he thinks Enron started with a good business strategy and that if it hadn't pushed the envelope, it could well have been a successful Fortune 1,000 firm. But its sights were set on the Fortune 10, so it got into markets such as broadband, which is a tough nut to crack even for the industry's leaders, he added.

"Those good old boys in Houston, they had to walk with the big dogs," said Hudson. "They are a textbook case of greed and mismanagement."

Enron officials couldn't be reached for comment.

The Shakeout

Many IT executives believe that Enron's bankruptcy was a case of poor timing and that the recession is the real culprit behind nationwide IT cost-cutting. Others see the trend as a natural shakeout following years of technological over-zealousness.

"What the '90s showed us was how much IT can do," said Charlie Feld, CEO of Irving, Texas-based IT management firm The Feld Group. "I think the next decade is going to be about businesses finding ways to harness all that creativity and use it, rather than chasing it because it's there."

As a CIO-for-hire at companies like Delta Air Lines Inc. in Atlanta and Frito-Lay Inc. in Plano, Texas, Feld's jobs have often been about simplifying IT infrastructures that grew complex because companies chased so many new opportunities that they lost focus.

"Companies fall in love with different technologies or business plans, and suddenly they find their infrastructure's been built in stovepipes," said Feld. "IT should make life simpler."

Companies poured cash into

customer relationship management, enterprise resource planning and Web-based systems during the 1990s, said Lacefield, and many are now realizing that they never saw returns from them.

At the time, he said, "it was nothing to talk about tens of millions of dollars of expense."

The problem, said Bill Schiano, an e-commerce professor at Bentley College in Waltham, Mass., is that companies were developing e-commerce IT strategies. "What they really needed was ... a business strategy with e-commerce at its center," he said.

Another mistake companies made was pursuing complex business-to-business processes when they couldn't even integrate their internal data, added Mark Evans, CIO at Tesoro Petroleum Corp. in San Antonio. Industrial-strength application integration tools that unlock legacy data and break down traditional IT silos are only now hitting the market, he said.

"Truth is, you can save more money improving internal processes than you can with any B2B project," Evans said.

The Dow Chemical Co. is still investing in IT, said Snehal Desai, director of e-business at the Midland, Mich.-based company, which owns half of Dow Corning. But Dow Chemical is focusing on longer-term structural changes to the way it does business, rather than pursuing new revenue streams, Desai added.

For instance, in 2000, when

Dow Chemical was looking for a hosting system to manage the workflow of its new business development projects, it couldn't find a suitable product on the market, so it created its own. It then spun off a separate company called iVenturi to develop and market the system, but it wound up putting it up for sale within six months.

Dorothy Hawkins, vice president of IT for the energy distribution group at NiSource Inc. in Merrillville, Ind., said companies today seem to be placing greater responsibility on the shoulders of IT departments to consolidate business processes and standardize operations.

Companies are done with the pipe dream prospectuses of the 1990s, and they're back to the fundamentals: using IT to deliver ever-increasing quality to customers at ever lower costs, said Jim Prevo, CIO at Waterbury, Vt.-based Green Mountain Coffee Inc.

"I think the whole world went nuts," he said. "But somehow, the truth has a way of winning in the end." ▶

ENRON WAS INTERESTED in pursuing tough markets such as broadband, a strategy that cost the company in the long run.

Striking a Balance Between the Bottom Line and Creativity

Asking tough questions about IT can be valuable, but it can also stifle innovation if there's no room to take risks. Still, IT leaders say there are ways to strike a balance between fiscal responsibility and technical creativity.

■ **Don't look at the Enron debacle and dismiss the idea of information creating value,** said Roger Gray, CIO at Pacific Gas & Electric Co. in San Francisco. "The basic concept of creating value through the use of knowledge rather than simply investing in brick and mortar is not fundamentally flawed.... However, I think the concept of 'capital-light' got carried away."

■ **"Lose the word _infrastructure_,"** said Charlie Feld, CEO of The Feld Group. Learn to explain the importance of integrat-

ing various applications rather than throw out the *I* word, which often translates into big bucks. Explain that if all you do is build applications, you'll wind up with application spaghetti.

■ **Conducting business with customers and suppliers over the Web makes sense, but know your limits,** said Jim Prevo, CIO at Green Mountain Coffee. Many-to-many business-trading exchanges can fly in the face of strategic supplier relationships that meet corporations' needs in terms of cost, quality and service, he said.

■ **Don't let corporate processes stifle efficiencies gained from IT,** said Andrew Scott, technology director at AeroGroup International Inc., the Edison, N.J.-based maker of

Aerosoles shoes. For instance, since AeroGroup's enterprise resource planning system went live in December, the company has merged its IT and distribution/logistics departments because their work has become so intertwined, he said.

■ **Give business leaders solid numbers** that measure value and return on investment, said Charlie Lacefield, retired CIO at Dow Corning.

■ **Get back to business basics,** said Prevo. Executives got so caught up in the race to stay on top of the IT curve that they lost perspective. "The world was playing musical chairs," he said, and when the music stopped, a lot of people were left standing.

– Melissa Solomon and Michael Meehan

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FRANK HAYES/FRANKLY SPEAKING

Girls Warm Up to IT

STATISTIC: 18% OF TEENAGE GIRLS online believe they could hack into their schools' computers. That's according to a survey of more than 1,000 young women ages 13 to 18 conducted last summer and released last week by the Girl Scouts. Could these kids actually break into school computers? Nobody knows — but they *think* they can.

And 58% of them believe they know more about computers than anyone else at home, including mom, dad — and their brothers.

In other words, everything the worrywarts have been telling us about girls and their future in IT is wrong.

Those worrywarts say girls are uncomfortable with computers, unsure about their abilities with technology and generally not good candidates to work in IT shops.

They point to some statistics of their own, such as a survey by UCLA researchers of more than 250,000 students who entered 434 colleges in the fall of 2000. That survey found that freshman women were only half as likely as men to rate their computer skills as above average (23% vs. 46%) and less likely than men to frequent Internet chat rooms (17% for women, vs. 23% for men) or use the Web in general (48% vs. 58%).

They point to the steady decline in the percentage of undergraduate computer science degrees going to women — from 37% in 1984 to 20% in 1999, according to Tracy Camp, an associate professor at engineering university Colorado School of Mines.

And they point to the fact that only about 25% of the people in IT today are women.

Boys, they say, get hooked on computers early with games — shoot 'em up, smash 'em up or chop 'em up. They graduate to wanting to build their own games, and that's their path into programming. Girls, who aren't much interested in shooting, smashing and chopping, don't start computing until later — and never catch up in either motivation or enthusiasm.

That's the theory, anyhow. And if the worrywarts are right, it really *will* require a concerted effort to overcome girls' resistance to computers. Even then, it might take generations for them to pull even.

But if the statistics from the Girl Scout researchers are right, that has all changed in just a few years. These kids are swaggeringly confident, and they're in front of a screen whenever they can be. Something is different — radically different — for the current crop of teenage girls.

That something appears to be instant messaging (IM). IM is turning into the kind of addictive application for girls that computer games have always been for boys. They've *got* to be online. Girls quoted in the Girl Scout researchers' survey say things like, "Being grounded from IM was the worst," and "I need the Internet." Two-thirds of them are online several times a day, seven days a week.

And IM shows signs of becoming a gateway addiction for these girls. Not just to chat rooms, but to self-built Web pages — complete with macho real-webheads-code-their-own-HTML attitudes. And for some, after HTML comes JavaScript — and sometimes full-blown programming languages.

Does this mean that a few years from now we'll be awash in female programmers? Maybe. But what could be even more important is how today's IM-happy teenage girls think about computer technology.

They see it mainly as a way to socialize. And it's a short step from socializing to doing business — which is what corporate IT is all about these days.

Which means that girls who cut their teeth on IM and wrote-it-themselves Web pages start out a lot closer to what we do than boys who play Grand Theft Auto.

So maybe we should stop worrying about how to get girls enthusiastic about IT.

If instant messaging really has solved that problem, we should be figuring out how soon we'll be able to put them to work. ▶

FRANK HAYES, *Computerworld's* senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

The 5th Wave

"This isn't a quantitative or a qualitative estimate of the job. This is a wish-upon-a-star estimate of the project."